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ROCKY MOUNTAIN SPOTTED FEVER AS FOUND IN THE EAST.*

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Definition.—Dr. Lunsford D. Fricks, of the United States Public Health Service, gives the following definition of the disease: "Rocky Mountain Spotted Fever is an acute infectious, non-contagious, febrile disease, transmitted by the bite of infective wood ticks; characterized clinically by frontal headache, pains in the muscles and joints, most pronounced in the lower region of the back and the extremities; moderately high fever, lasting two or three weeks in uncomplicated cases of moderate severity; a petechial eruption, appearing first on the ankles and wrists, thence spreading over the whole body."

History.—This disease has probably been in Idaho and Montana ever since they were settled by white men. The disease was first reported to the Surgeon General of the Army by Major W. W. Wood, of the Army Medical Corps, in 1896. Maxey of Idaho, and McCullough of Montana, gave the earliest descriptions of the disease.

The first cases found in the East were mistaken for endemic typhus. The first cases that I had in my practice were in the summer of 1930, and were diagnosed at that time as endemic typhus.

In April, 1931, a bulletin was published by the United States Public Health Service, stating that the cases seen in 1930, were not endemic typhus, but Rocky Mountain Spotted Fever. All the cases that I have attended were seen by Dr. R. L. Dyer, of the United States Public Health Service, except the last three. The disease east of the Mississippi River has been found in the States of New York, Pennsylvania, Maryland, Delaware, Virginia, North Carolina, South Carolina, Georgia, Tennessee, West Virginia, Kentucky, Indiana, Illinois, and District of Columbia. Fairfax County has had cases every year since 1930.

Incidence.—The disease is found wherever there are infective ticks, and mostly in the late spring and early summer months. I nave treated ten cases —three in 1930, one in 1931, one in 1932, none in 1933, three in 1934 and two in 1935. Three cases started in June, five in July, one in August and one in December. The earliest case started June 5th, the last December 10th. Eight cases were in males, two in females. Seven of the cases were twelve years of age or under. One was thirty-five and the other two between fifty and fifty-five.

Etiology.—The cause of the disease is generally thought to be one of the Rickettsia. The Rickettsia are gram-negative, intracellular, non-cultivable and non-filterable bodies. Behavior in animals and man indicates a distinctive life cycle. Ricketts established the transmission of the disease by ticks. It was proven by Ricketts in animal experimentation that infection failed to occur unless the ticks were attached for a few hours. Infection was obtained in one case in one and three-fourth hours. An infected tick that has hibernated or been starved for awhile, needs fresh blood to re-activate the virus. This explains the above statement. As many ticks are removed quickly, that helps to account for the comparatively few cases in man. Unfed ticks may live for a long while. The female tick engorges until it becomes many times its normal size, then it drops off and crawls to a sheltered place. Before leaving its host, the female is impregnated by the male. She then remains quiescent for a week or more. Then she deposits two to seven thousand eggs, taking several days in the process. These hatch into six-legged larvae, or, as they are called by the country people, "seed ticks." No doubt many of you have had the disagreeable experience of getting your clothes covered with them while walking through the woods and tall grass. They are about

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one-thirtieth of an inch in diameter. They feed on rodents chiefly.

After feeding two or three days they drop off, shed their skins, emerge as nymphs, with eight legs. They are asexual. They do not become active until the following season. The disease is maintained through rodents and ticks. Human cases are secondary and accidental. Various species of wild rodents have been considered susceptible to the disease. The life cycle of the tick consists of four stages: the egg, the larva, or seed tick, the nymph, and the adult tick. They feed three times during this cycle,—twice from small rodents as larvae and nymphs, and once in the adult stage from the larger animals.

Morbid Anatomy.—Only few post-mortems have been made in the East. The spleen is nearly always enlarged. Thrombosis of the blood vessels is common. Due to thrombosis, necrosis may develop in the skin, especially in the external genitals. In severe cases the testicles become gangrenous, leucocytosis is present—and maybe as high as 12,000. The red cells may be reduced as low as 1,200,000.

Incubation.—This may be from three to ten days.

Symptoms.—In the prodromal stage we are likely to note malaise, chilly sensations, and loss of appetite. The patient complains of feeling "all in." The onset is usually accompanied by a chill. The face is flushed and the conjunctiva injected. Temperatures are usually quite high, and in nearly all my cases went as high as 104 degrees. In one case, which was a fatal one, the temperature reached 105 degrees. In another case (a girl of twelve) the temperature took a sudden drop to below normal. This was early in the morning. It went up to 104 that evening and went down after that by lysis. In all of the cases except the fatal one, the temperature lasted over two weeks. The pulse is at first full and strong, but becomes more rapid and much weaker as the temperature rises. The respirations are rapid. The rash appears between the third and seventh day. In most of my cases it was the sixth day. The rash appears first on the wrists and ankles. It then reaches the back and abdomen. The palms of the hands and the soles of the feet are usually involved. In some cases the face and scalp are also involved. The twelve-year-old girl lost all of her hair. The eruption is at first macular. In the second week it becomes petechial, except in mild cases. Patients complain very little of itching, but they do complain of discomfort from the rash. The tongue is dry and coated. Kernig's sign is present in some cases, but is not pathognomonic. There are severe nervous symptoms, lethargy, restlessness, and often intense irritability, especially in children. In the case that died in 1932, a boy four years old, there were severe convulsions, followed by coma and death.

Complications.—Pneumonia: One of my cases developed an attack of lobar pneumonia. This was in a six-year-old boy, and was an off-season case, starting December 10, 1934. The disease in a male patient (thirty-five years old) lasted four weeks. During convalescence he had marked disorders of sight and hearing, which finally cleared up under treatment by a specialist. In one case (girl, twelve years old) there was heart block, which improved as the fever subsided, and finally disappeared.

Diagnosis.—Rocky Mountain Spotted Fever may be mistaken for typhoid fever. This happened in one of my cases in 1934 (male, fifty years old). This was the only case that was moved to a hospital. He was taken with diarrhea and an evening rise of temperature. He also had, in the second week, on his abdomen, an eruption that my friend, Dr. Latane, and I took to be rose spots. There were papules which disappeared momentarily on pressure. A few days later there developed on his arms, legs, palms of his hands and soles of his feet, a macular eruption, and the diarrhea disappeared. The Weil-Felix test showed an agglutination of one to one hundred and fifty. The tests for typhoid were negative. Rocky Mountain Spotted Fever may be mistaken for measles. The severe catarrhal symptoms, the rash on the face and body, and Koplik's spots, so characteristic of measles, should settle the diagnosis. Endemic typhus may be mistaken for Rocky Mountain Spotted Fever. In Fairfax County, as far as is known, there has never been a case of endemic typhus. The Weil-Felix test is diagnostic for both diseases, so that doesn't help any. Typhus fever is spread by the rat flea and the body louse, while Rocky Mountain Fever is spread by wood ticks. The temperature runs higher in Rocky Mountain Fever, and the disease lasts longer and is more severe than endemic typhus. The rash appears earlier in Rocky Mountain Spotted Fever. In typhus the rash appears first on the chest and abdomen. In Rocky Mountain Fever it is on the wrists and ankles. In typhus some of the lesions are papular.

The majority of endemic typhus cases occurs in adults, while Rocky Mountain Fever attacks a large proportion of children. Seven out of ten of my cases were children. The mildest of my cases gave the highest agglutination in the Weil-Felix test—one to 500. The severest case that recovered (male, thirty-five), never had an agglutination higher than one to twenty, which would not have meant anything if the symptoms had not been pathognomonic.

Prognosis.—In Montana, in the Bitter Root Valley, the mortality has been as high as 60 per cent to 90 per cent. In a list of ninety-three cases of Rocky Mountain Spotted Fever occurring in five states in the East and District of Columbia, there were twenty-one deaths, a percentage of 22.7. In my ten cases there was one death (10 per cent), but a number of the cases were mild.

Treatment.—The treatment is entirely symptomatic. A vaccine has been prepared by the United States Public Health Service, as a preventive, with good results, but is of no value in treatment. Sedatives are indicated for nervous symptoms. Sponge baths, ice-caps, and sometimes cold tar preparations are indicated for the fever. The bowels should be kept open. Digitalization is advised by some, as heart action is often weak. One of my cases, a twelve-year-old girl, was digitalized on account of a weak heart action. She developed heart block, which cleared up, but I am not certain whether this was caused by high temperature or too much digitalis.

Diet should be liquid and semi-liquid, with plenty of fluids (orange juice). Patient should be kept quiet and have no company except the nurse and family. Personally, I consider it a mistake to move a child sick with this disease to a hospital, because of the severe nervous strain, imposed by moving and change of scene. Some patients have been moved on account of the convenience in obtaining and administering convalescent serum, but I don't believe, from what I have seen and heard, that there is any advantage in administering the serum, and serious consequences have occurred.

Prophylaxis.—The United States Public Health Service advises three things: *First,* avoid ticks; *second,* remove ticks from the person; *third,* vaccination. When out camping, avoid places known to be populated by rodents. The safest camp grounds are in standing timber, where vegetation is scanty. Keep away from trails, and old, grown-over roads. When walking in tick-infested areas, wear clothing that will prevent the ticks from getting next to the skin. Boots, leggings, puttees or socks should be worn outside the trousers' legs. The armpits and back of the neck are favorite spots for ticks to attach themselves. As I said before, ticks are not as liable to infect if removed early. The clothes should be changed after walking, and ticks looked for in the clothing and on the body. It is better to use forceps or tweezers, as it is dangerous for ticks to be mashed in the hand. They should be seized close to the skin. There is no danger from the head being left in the skin. Iodine should be painted on the spot after extracting the tick.

I am indebted to Bulletins and Reports published by the United States Public Health Service for technical information, and to my friend, Dr. R. L. Dyer, of that Service, for advice in preparing this paper.

Discussion

DR. H. A. LATANE, Alexandria: I enjoyed very much hearing this paper by Dr. Caton. He has covered the subject so thoroughly that he has not left much to discuss. I do not know anybody better qualified to write a paper on spotted fever than Dr. Caton. He is doing a country practice where he is likely to come in contact with it; he has been a health officer in the past, well-trained in epidemiology, and has had the benefit of the help of the United States Public Health Service. Just why he asked me to discuss it I do not know, except that I saw one or two cases with him, and I am in that section where we have been having spotted fever.

Just when it appeared in the East is very uncertain. I feel sure that we have had many cases that were not recognized. I had some cases before Dr. Caton started finding his. I had two cases in 1928 in a suburb of Alexandria, in a mother and her small son. There was back of their place a little ravine which they said had ticks in it. I was puzzled to diagnose it and finally made a diagnosis of typhus fever. I called in the Public Health Service, and they confirmed the diagnosis of spotted fever. I promised the family one of two things—either the patients would get well in two weeks, or they would die on the fourteenth day. They were some of the sickest patients I have ever had. They were violently delirious, and their dispositions changed entirely. The nurse said they were downright mean, and ordinarily they were people of very good disposition. I had two or three cases in the next few years from around this same ravine.

As to the future, there is apparently no way to control it in tick-infested areas if people continue to walk in those areas and get ticks on them, except to wear the proper clothing to protect themselves or to put some oily substance on them—grease themselves with carbo-

XUM

lated vaselin or sulphur ointment or something of that kind, which very few people take the trouble to do, and clean themselves when they come in. Apparently the disease is spreading in the East in the rural areas.

I enjoyed the paper, and I think Dr. Caton is to be congratulated on reporting his cases.

DR. J. C. FLIPPIN, University: At a meeting of this Society a year ago I discussed a paper on this same subject. My purpose then and now is to emphasize the fact that Rocky Mountain Spotted Fever is a more common disease in Virginia than medical practitioners have realized. Recent reports from neighboring states, notably West Virginia and Pennsylvania, indicate that the disease is present in those localities. Each summer for the past several years we have had patients with this disease in the University of Virginia Hospital and, as I said last year in my discussion, I feel sure that I have seen this disease for many years past.

Up to this time it would seem that measures looking to the control or prevention of this disease from a public health point of view have offered little. I would call attention to the fact that in infected areas in the West vaccination is being used on rather a large scale and here in Virginia we may well think of the propriety of using vaccines among the population in a definitely infected area. In so far as I know the vaccine used in this disease is not available from any of the drug houses, but is prepared only by the United States Public Health Service and could doubtless be obtained through our State Department of Health.

DR. H. S. DANIEL, Louisa: I should like to say just a few words. I have seen five cases in my practice, which is almost entirely rural. These cases have been rather widely distributed. My experience has been that in children and young adults the prognosis is quite hopeful, though they become desperately ill. However, in adults past fifty or sixty years of age the outlook is not good, and if they are alcoholics I feel hopeless. This very briefly summarizes my experience.

DR. S. A. ANDERSON, JR., Richmond: How important is the human host and the rodent host? And can Dr. Caton tell us something about the vaccine?

DR. J. E. KNIGHT, Warrenton: The first case that I saw was in Fauquier County in 1927. Unfortunately the correct diagnosis in this case was not made either by me or the consultant, nor was the true nature of the malady definitely determined until after the death of the patient. Just about this time the State Board of Health issued a bulletin on this disease and, after reading this and looking up further information, we became convinced that this was what my patient had.

I have had in my own practice and consultation work probably eleven or twelve cases since 1927, most of these being in children. As to the distribution of my cases, the second case occurred seven miles from the first one and the others ranged from three to twelve miles apart. There were a number which occurred within three or four miles of each other and these were near Warrenton. One of my cases occurred in Prince William County, eighteen miles from Warrenton.

There were a number of deaths in this series of case. Most of them were very sick from the start and co- tinued so, getting worse until the thirteenth or fourteen day, at which time they either died or began to get we In one of my cases the patient had convulsions just be- fore he died.

As to the character of the eruptions, this varied to quite an extent. Some had large macules, while other I might say the majority, had small petechial eruption mostly manifested on the arms and across the chest. Where these eruptions were faint, if the arm was constricted high up, the eruptions would become more pronounced and remain so.

I think we have had five or six deaths from it in the county.

DR. FLETCHER WRIGHT, Petersburg: What is the earliest time that you can get a positive agglutination?

DR. PERCY HARRIS, Scottsville: In my experience I have had two cases of spotted fever. One was a child three or four years of age, in Buckinham County; the other was a young man of Albemarle County, about twenty-five, who was running a truck in building a road when he was bitten by a tick and had spotted fever. The child was very ill and unconscious from the beginning, and died in about seven days. The young man pulled through, but he was just about the illest man I have ever seen in my life to do it. As the doctor stated just now, his disposition changed entirely. He was about the meanest man I ever saw when ill and one of the nicest fellows I knew when well. The eruption started on his feet and finally got all over his body. In the beginning he had all the symptoms of typhoid. It puzzled me terribly, because all the tests I made were negative. All the blood tests came back from the State Laboratory negative. I discussed it with several—probably discussed it with Dr. Flippin and others at the University. Decided it could not be anything else than spotted fever. I think it is a very good point to bring up that you do not always get a positive agglutination test. That is the main reason I wanted to report this case.

DR. FRED GOCHNAUER, Upperville: I saw a case during the epidemic of polio that we have recently had. This was in Loudoun County. I live in Fauquier, but practically just over the line. The case was seen on Friday, we will say, and the mother thought the child was quite sick on Wednesday—it had temperature and was ill enough to call a doctor. On Monday an epidemiologist came up from Richmond; I called him up. I used all the precautions as in dealing with a case of polio. I made a tentative diagnosis of poliomyelitis of the cerebral type. The child was very lethargic. They were people of the tenant class, very good in their habits, but with thirteen children it was hard to keep up with them, and probably some of them got out in the tick area. The mother said she had the habit of "de-ticking" them every day.

This child had definite rigidity. The doctor said he thought we did not have a case of polio but of spotted fever. I asked about doing a spinal puncture, and he said he thought the patient was going out about the

next day, so in that case it would do no good. The puncture was not done, and I still held to my diagnosis—not that I was putting my own opinion against his, but I thought it was a little better to hold on. So I quarantined the child, in order not to have any trouble so far as this case of polio was concerned. The doctor was in the neighborhood a few days later and went to see this child (which, of course, was all right). He came up by my house and said he still thought I had a case of spotted fever, and thought the child would die in a few days. It was still very ill.

Occasionally we do have an eruption in polio. The child, instead of running a temperature for about two weeks, ran a temperature, I would say, for about four weeks. In six or seven weeks the child was well. I find, in measuring the calves of the legs, that on one side the circumference is not as great as on the other. I am not trying to prove my own point particularly, but I do say that this is one case in which we did know what we had to deal with. Since the case is over, I think we had a case of meningococcus meningitis or cerebro-spinal fever.

DR. CATON, closing the discussion: Someone asked me about the early stages and agglutination. It takes about ten days before agglutination occurs, but my experience is that sometimes a high agglutination does not occur; that is, we do not often get a report of it, so I think that an agglutination, unless *high*, does not amount to a great deal in making a diagnosis.

The vaccine I have had no experience with. It has not been used in the East, so far as I know. It is used out in Montana and other places in the West, where they have a very severe type of the disease.

I want Dr. Flippin to tell me what is his idea of off-season cases.

In regard to the area of infection, there have been cases all over Fairfax County and in Arlington County, and adjoining counties in Maryland and around Washington.

DR. FLIPPIN: Has anybody seen any cases besides you and Dr. Latane?

DR. CATON: Oh, yes, sir. Other physicians have had cases.

All of us know that severe cases of measles used to be called black measles, and I do not doubt that some of those cases that were called black measles were Rocky Mountain Spotted Fever. I think that is very likely. It has not always been possible to find evidence of a tick bite or that patients can remember being bitten by a tick. Most of the cases did know it, but a few did not. Dr. Wilkins, of Alexandria, had a case in the Alexandria Hospital that came from the CCC camp down near Mount Vernon. He came in very sick. He found a tick still attached in the patient's navel; it had entrenched itself there, and the man had never noticed it.

EXPERT TESTIMONY AND ITS RELATION TO MENTAL RESPONSIBILITY AND NEUROLOGICAL INJURY.*

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Introduction. Man is the only animal that has attempted to civilize himself since the evolution of species from a cosmic world of chaos. Man soon became gregarious, separated into races and within these larger groups formed smaller groups of similar interests, similar vocations and similar intellects. As civilization developed those who were distraught, insane and anti-social began to be recognized as such. Three organized forces developed to take care of these by-products of the developing human race—religion, law, and medicine. Early in the fifteenth century in Bedlam, England, in Charenton, France, and in Spain, out of the religious monasteries developed mental hospitals, since which religion has gradually withdrawn from the field and medicine and law have assumed the responsibility. The state, through legislative bodies in cooperation with medicine led by psychiatry, takes care of the majority of the frankly insane. Neither law nor medicine appreciated until the present century that the criminal was possibly a sick man, and neither have since appreciated this fact except to a limited extent.

The Expert Witness. You may be asked in court, "what is an expert?" I was asked this once. I answered by giving Dr. James K. Hall's simple definition that an expert is one who has expert or special knowledge about a subject, and gave his illustration that, although a farmer may think he knows a hen's egg when he sees one, the curator of the Smithsonian Institute says there are several dozen different kinds

*Read at the Seaboard Air Line Surgeon's Association, in Miami, Florida, on December 5, 1935, and at the Atlantic Coast Line Surgeon's Association, in Charleston, South Carolina, April 7, 1936.

of bird's eggs so much the size and shape of hen's eggs that only an expert can pick out the "fruit of the hen."

An idea has gotten abroad that expert testimony is biased and that there is something not quite honorable about it. The truth is, however, that regardless of the fact that there are a few crooks in every calling, expert testimony offers a field of most skilled, intelligent, and beneficial procedure. Before you are called to give expert testimony in a case the lawyers for one side or the other consult you. If you are not convinced, after going thoroughly into the situation, you should then and there refuse to testify. You can be called as an ordinary witness and be made to testify, but you cannot be made to testify as an expert unless you wish to do so.

I have seen more cases, dependent on medical testimony, lost because the attorneys for the losing side were not up on the medical aspects of the case than for any other reason. There is no excuse for an attorney in questioning or cross-questioning an expert witness to mispronounce or not know the meaning of the medical terms involved. That variety of ignorance, of which some attorneys even seems to be proud, certainly must have a poor effect upon either an ignorant or an intelligent jury.

If you have examined the patient you may answer as to your findings. If you have not examined the party involved the attorneys may request an opportunity for you to make an examination. The refusal may and probably will come out at the trial and will almost certainly react to the injury of the side responsible for it. If you are denied an examination, you can only answer a hypothetical question based upon the evidence presented which you may not have heard, or upon all the evidence in the case which you must have personally heard.

If you are requested to sit through a case, do not idle and converse through it in whispers, but give it your whole attention and, personally, I believe it is best to make notes of important points. Also observe the witnesses. I was able once to tell that a witness was not telling the truth when she said she was a graduate of a very high standing training school for nurses, because her language and demeanor indicated that this could not be so. Based on this observation, it was proven during the trial that she had never been a member of the training school. Many times a claimant, claiming paralysis, has been observed to move the part or to assume positions which one with a genuine difficulty could not assume. This is more apt to occur when the claimant is not on the witness stand and therefore not on guard.

Do not be afraid of attorneys. Prepare yourself thoroughly and in your expert knowledge you have the advantage of them. But do not assume that you know the case and for that reason go on the witness stand without careful study. Moreover, avoid every appearance of being partisan. If an attorney tries to browbeat you, remember that he creates for you a sympathetic effect on the jury, if you have shown that you know your case and are fair in your testimony. Let him keep up bull-dozing you to a certain extent and then watch for an opening, and—when you get the chance, as you usually will—crack him between the eyes with your answer or ridicule him. Cross questioners are sensitive to a thrust or to have the laugh on them.

Illustrate your points in simple language by apt and understandable illustrations. Speak directly to the jury loud enough for all of them to hear and take them into your confidence. Speak in terms of common usage or when you have to use medical terms explain them so that every juryman can understand. Remember your reputation is at stake as well as that of the attorney.

Some attorneys are in the habit of bringing a job-lot of textbooks into court and try to contradict an expert by quoting some alleged authority. Remember that, if you are properly qualified, you yourself are an authority. Never let them quote a sentence against you and question you on that sentence. You can prove almost anything by picking an isolated sentence from some medical authority, just as you can by picking an isolated verse from the Bible. Ask to see the book presented. Look at its date of publication,—frequently it is antiquated. If so, turn to the jury and tell them it is as out of date as an automobile of the same period.

You will be asked, at times, the same question put in various ways, in order to trip you or to get you to contradict yourself. In this instance, it is best simply to repeat your first answer each time calling the attention of the jury to the fact that the question is essentially the same that was asked before. Remember you are in a battle of wits and, if you do not feel equal to the contest, you had best

not qualify as an expert. You should come to court fully prepared on the case and on related medical questions. If, however, you do not know the answer to a question, frankly say so. If possible, and it frequently is possible, get the attorney afraid to question you. Do not let it disconcert or frighten you if an attorney tries to use unfair means in questioning you. As soon as he begins to do this, any physician accustomed to giving expert testimony knows he can turn the table on the questioner. Keep cool, be deliberate and turn to the jury and explain to them the unfairness of a question, if it is unfair. Keep your head and keep your temper unless the attitude or questions of the opposing attorney are abusive or insulting,—then at least keep your head.

But do not be touchy or bear resentment. Remember in a legal contest much is said in heat, on the spur of the moment, under stress and excitement. Lawyers on the whole are admirable human beings, honoring their profession, and possessing the ability to shake hands and forget antagonisms after the battle. Physicians, on the other hand, in dealing with each other are liable to bear malice and never forget a slight. Balancing the two great professions, however, I feel that in admiration as to nobility and in criticism as to rascality there is little difference.

Mental Responsibility. It has been said that no satisfactory definition has been given of insanity; that the medical meaning of insanity is entirely different from the legal meaning; that no one knows what insanity is; that the term insanity should be dropped. I believe none of these things obtain to an insurmountable degree. Webster's dictionary gives the definition of sanity as being of sound mind; hence, insanity is a state of unsound mind. Insanity is, I believe a departure from mental soundness in degree. The term insanity is not generally intended to cover all mental states. Idiocy, imbecility and feeble-mindedness are not included, nor are such states as unconsciousness, stupor and alcoholism. Any of these states, however, may render an individual irresponsible. Insanity may be permanent or temporary, and temporary insanity may last from a few moments to years. Insanity may or may not have a hereditary basis. Insanity may be due to known causation, syphilis, pellagra, ductless gland disease, and toxic conditions, for instance, giving, usually, confusional states, or to unknown causation, as manic depressive psychosis, paranoia and dementia praecox. Insanity may be due to a loss of emotional control. Insanity may be induced not only by the ingestions of poisons or the contraction of disease but by brain injury or pathological brain states like brain hemorrhage, brain tumor, brain abscess or hardening of the arteries of the brain. Brain anemia, brain congestion, brain edema or lack of brain nourishment may induce insane states. But what is yet even less recognized, the brain structure may be perfectly normal and emotional shock, irresistible compulsion, or improper reaction to suggestion may constitute insanity in certain instances.

The diagnosis of insanity contemplates abnormality, or unsoundness, in thinking, feeling and acting. We have no definite yardstick or thermometer to tell us when the individual has passed through the border-zone or to indicate the degree of his affection, yet I have known alienists without instruments of precision whose opinions on a mental condition were quite as accurate as those of the average internist or diagnostician concerning a medical disease, although the internist was aided by having a clinical blue pencil in his hand, a stethoscope in his ears, an ophthalmoscope at his eye, with X-ray, basal metabolism, cardiographic and laboratory reports at his elbow while dealing with a patient who had a clinical thermometer in his mouth, a gastric or duodenal tube down his throat, a blood pressure cuff on his arm, a cystoscope in his genitals and a proctoscope in his rectum!

The legal fraternity thinks in terms of criminality based on a greater degree of insanity than the medical fraternity. They think of punishment for the protection of society; we think of treatment. They think of the knowledge of right and wrong; we think of mental responsibility as affecting reason, insight, judgment, emotions and personality. But there is beginning a drawing together and mutual understanding in regard to these divergent ideas.

Neurological Conditions. Brain, spinal cord and nerve injuries constitute quite a large proportion of cases calling for medical expert testimony. Many persons suffering from severe skull injuries completely recover because at times the skull may be badly fractured and the brain not severely injured. On the other hand, the skull injury may be slight or imperceptible and the brain injury serious. The head may be struck on one side and the force of

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the blow be so transmitted that the brain is injured on the opposite side (contracoup). A slight injury to one part of the brain may cause greater and more permanent damage than a severe injury in some other part.

Many people claiming damages for personal injury should not do so because they have some state which precipitated the accident and the defendant has been in no way responsible nor negligent. People with epilepsy may, because of the disease, fall into machinery or otherwise injure themselves. Claims are made because of apoplexy. Dr. J. M. Hutcheson at the last meeting of the Medical Society of Virginia read a valuable paper on this subject. I was called to testify in a case in which there was a bump to a railway train at night. A lady, sixty-five, was on the train. She got out, walked around, got back on the train, went to her destination and carried on her usual activities. Thirty-six hours after the jarring of the train she had a stroke of apoplexy and died. I testified that I thought she died of apoplexy, as she was known to carry a blood pressure of two hundred and fifty systolic, and that if the jar had caused the difficulty the symptoms would have been immediate. The case was compromised against my advice.

X-ray pictures should be taken of head and back injuries. They may or may not throw light on the case. The interpretation of these X-ray plates is a matter of expert decision as X-ray shadows are sometimes indefinite or misleading. Occasionally an unexpected finding may be made. In a criminal case, the X-ray of which was taken the day of the trial, an unsuspected calcified area was found in the pre-frontal lobes of the brain in a man who had previously received a severe blow on the back of the head. On the other hand, in another case the X-ray of the head was negative but at autopsy a piece of a beer bottle with a surrounding area of degeneration was found in the brain. The man had been hit on the head sometime before, the bone had closed over the opening made by the piece of bottle and the X-ray did not take the glass.

The spinal cord may be injured and this injury may be the basis for damage claim. A careful neurological examination of the reflexes will usually determine the nature and extent of an organic injury to the cord. Railway spine cases, so-called, are usually hysterics or malingerers, both getting promptly well when the case is settled.

Individuals may claim all sorts of injuries and present all sorts of symptoms. The entire injury may clear up upon settlement of the case—whether the case is won or lost. Malingering is the conscious assumption of symptoms, while hysteria connotes the subconscious assumption of symptoms. The hysteric may be essentially honest, but the hope of compensation, the suggestion of attorneys, doctors, family and friends fix ideas of disability upon him. A malingerer deserves no consideration in compensation, but in a hysteric the question arises as to whether the accident did not bring out a latent condition—in other words, render the claimant more nervous. These cases I think are best settled for modest sums out of court and, even if tried, the compensation awarded should be small.

A difficult group are those persons who, after a head injury, claim to suffer from residual subjective symptoms—headache, dizziness, sense of fullness, slight deafness, difficulty in vision, and inability to concentrate. If no organic signs can be elicited the case is usually not organic, but one must be careful not to overlook slight signs. Numbness, tingling, burning or weakness sensations may be attributed to nerve or spinal cord injury. They are usually transitory symptoms unless organic neurologic signs can be found.

Thus we see that the question of expert testimony and its relation to mental and nervous conditions is a large one—one that requires knowledge, experience and possibly especial aptitude. It is a dignified and scientific part of medicine and no honest physician need fear injury to his reputation when he undertakes a case. Expert testimony does another thing of importance,—it brings the two great professions of law and medicine tgoether and should promote mutual understanding and cooperation in solving the problem of the discards of society. Upon the proper understanding of medico-legal problems much of the happiness, justness and prosperity of the race depend.

212 West Franklin Street.

ENURESIS IN CHILDREN.*

JAMES V. BICKFORD, M. D.,
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This is a report of twenty-six cases of children coming to the King's Daughters Children's Clinic with the major complaint of bed-wetting. Urological findings were negative in all of the cases reported in this analysis.

Incontinence of urine in children is a very common complaint. To clear the nomenclature however, I shall refer to incontinence only in those cases which show some organic or pathological change which bears a direct relationship to the cause, and shall use the term enuresis to cover cases in which, after a very complete physical examination, no evidence of organic pathology can be discovered to account for the complaint.

Using this criterion, it is only within latter years that enuresis has been treated as a conduct disorder.[1] The medical literature is voluminous with reports on the etiology and treatment of this common complaint, which fact is evidence that little is understood about it. In reviewing the literature, it is interesting to observe how varied a list of conditions has been described as the cause of enuresis. Spina bifida occulta has been given front ranks as playing an important part in the etiology. Karplin[2] found 54 per cent of normal children with spina bifida of the lumbosacral region. He concluded that the condition could be considered as an organic basis of enuresis only in those showing extensive involvement of the vertebrae of the lumbosacral region. Kanner[3] in a large series of cases found only 1.5 per cent of spina bifida in enuretic children. He contends that spina bifida cannot reasonably be held responsible for enuresis when it consistently misses school periods and occurs only during play time. Furthermore, the prompt cessation of the symptom in his cases after adjustment of personality and environmental difficulties, substantiates his contention. In our series we did not feel that there were any cases where conditions warranted roentgenologic investigation.

Closely allied to the above, is the Myelodysplasia theory of Fuchs[4], in which he describes a clinical syndrome as evidence of a rudimentary non-union of the sacrum and abnormalities of the lower section of the spinal column. In this series no evidence of the syndrome was present.

Phimosis is sometimes associated with enuresis. Three of our cases had had circumcisions performed without any improvement in the bed-wetting. Undoubtedly, one occasionally finds a case in which there appears to be a direct relationship between the two conditions.

Chronic tonsillitis and adenoids have been held responsible for many behavior disorders, the theory being that adenoid growth interferes with proper respirations, causing an increased CO_2 content of the blood, which in turn results in abnormal depth of sleep. There is no actual evidence to support this assumption. Seventy-five per cent of the present cases had the tonsils and abenoids removed without any change in the enuretic state.

Many conditions, too numerous to discuss, have been found associated with such a common complaint as enuresis, and considered as the cause. A few of these are hysterical reactions, epileptic equivalents, thyroid deficiency, too acid urine, etc.

The psychoanalytic school has been quick to explain it as a wish-fulfilling reaction, and has devised many theories. The most popular school states that it is a substitution for masturbation, which Klaesi[5] calls anticatatasis. One may find rare cases in which the casual relationship to a particular theory may be strong.

Frary[6] studied fifty-nine clans in which enuresis occurred and concluded that there was a hereditary tendency which followed the Mendelian law of inheritance. Twenty-four per cent of the present cases showed enuresis in the immediate family (father, mother or siblings). This does not prove heredity in so frequent a condition. Probably as Kanner[3] points out, it provides a reaction pattern or family tradition.

Statistical data reveals that enuresis is present in both sexes with about the same frequency. Analysis of these twenty-five children shows that 68 per cent were boys and 32 per cent girls. The age

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distribution ranged from five years and six months, to twelve years and nine months, at the time of first observation. The intelligence quotient varied within the usual distribution seen in other patients coming to the clinic, namely, from seventy-three to one hundred and twelve. Nocturnal enuresis is the commonest form.

Nocturnal enuresis, only, 68 per cent.

Nocturnal and diurnal enuresis, 32 per cent.

Diurnal enuresis, only, 0 per cent.

All the children had had enuresis since birth, with a few cases showing rare periods of from two to five days with dry beds.

As stated before, enuresis is a conduct disorder. In every case it was only one of several symptoms indicating personality difficulties. The tabulated list of these is as follows:

Feeding Problems	5
Temper Tantrums	3
Nail biting	7
Hypochondriasis	2
Masturbation	2
Fear Reactions	5
Encopresis	1

This table of associated complaints shows how essential it is to treat the enuretic child and not the enuresis *per se*. The children presented different types of personalities, from the timid, shy, bashful, quiet group, to the restless, fidgety, hyperactive type. The most common general observation was that the majority had a general immaturity or failure to grow up and accept responsibilities in accordance with their age. A few illustrations will best describe these factors.

H. P. (Case 1), a restless, fidgety, easily excitable boy of eight years, six months, who had soiled and wet himself both day and night since birth. His intelligence was normal (IQ—101). The father deserted the family shortly after the patient's birth. The mother was unintelligent but willing to cooperate. She had accepted his difficulties on the basis of "weak kidneys" and chronic diarrhea. The child was malnourished and ill-kept. He had no school problems but was afraid of the children on the school ground, as they teased him about his incontinence. He felt inferior, confused and overwhelmed by his difficulties. Treatment resulted in a very prompt cessation of his enuresis and encopresis. After a two-month period without any relapse, he was discharged. After a domestic upheaval (grandmother leaving) the child relapsed to bedwetting. His mother gave him "kidney pills" prescribed by a neighbor and, when routine check-up was made three months later, he had reverted to his former wetting and soiling. Treatment was resumed and difficulties again ceased.

T. K. (Case 4) is an intelligent boy of twelve years, six months, with a slight speech defect (stammering). He was very sensitive over his enuresis which was of the nocturnal type. He complained of "hot flushes" and numerous hypochondriacal symptoms. The child was born two years before his parents marriage. The father later died of tuberculosis. The mother is conscientious, but the financial struggle is great. Treatment resulted in cessation of the enuresis, speech disturbance cleared, and hypochondriasis is no longer evident. After discharge, the mother became involved in domestic problems because of immoral relations with men and neglected the children. The boy was conscious of this problem, and relapsed into a mild enuretic state. Further work with the family resulted in final cessation of the complaint.

A. C. (Case 7), an intelligent girl of nine years, three months, with an IQ of 110. The father is in a sanatorium with active tuberculosis. The family is broken up. The child was reared until the age of six years by a doting grandmother who spoiled her badly. This intelligent child had been made to wear diapers in hope of curing the enuresis. Therapy consisted of adjusting the environment and a summer vacation at a camp, which resulted in cessation of enuresis.

A. H. (Case 12) is a dull boy of seven years, one month. IQ of 73. The father is in jail for nonsupport and habitual drunkenness. The family standards extremely low. The mother is very unintelligent and noncooperative. So far, we have been unable to secure sufficient cooperation and interest in either patient or parent. The result is that the enuresis continues along with other difficulties.

R. H. (Case 14), a twelve-year-old boy with normal intelligence (IQ-98). Physically he was in poor condition; he has chronically diseased tonsils and adenoids, phimosis, dental caries, and malnutrition. The family situation was horrible. The foster father was antagonistic toward the child, using severe whippings and starvation as punishment for

the most trivial offence. The boy was completely cowed by this environment and becoming delinquent as a method of escape. The case was taken into the Juvenile Court and patient placed in a boarding home under the supervision of the Children's Bureau. There were many difficult months before this child began to readjust. During this period the enuresis persisted as did many of his other personality difficulties. Finally, the boy began to respond to the new environment with an improvement in the enuretic state.

J. C. (Case 18), an eight-year, nine months old boy with retarded mental development. IQ, 76. The patient is a shy, timid, quiet boy—as mother states, "just like a girl." He prefers to play alone or with his young sisters. He is afraid of the boys in the school yard, and does not know how to get along with playmates. At nine years he is in the 2L grade (frequently repeated grades), and worried because younger sister has caught up with him in school. The general personality make-up is very immature and lacking in a sense of responsibility. Repeated attempts at adjustment have failed, so far, to help this child. The enuresis is the same as when first seen.

One can see that the complaint of enuresis is a part of a general infantile reaction and evidence of failure to accept responsibility. A child stops when he wants to, and when a sufficient motive has been furnished. Hence, treatment is individual, remembering, as Kanner says, "that a living person happens to be attached to a urinating bladder." We must, therefore, treat not the enuresis, but the enuretic child with all his difficulties. (We use the improvement of the specific complaint as an index of the success of our therapy.)

Therapy consists of several phases: (1) Convincing the child and the parents that he is able to overcome his difficulty, and securing their cooperation. It is not easy sometimes to remove the stigma of the punishments and the alibis of "weak bladder", or to furnish motives for the child which are sufficient for him to want to grow up when he prefers to remain infantile. (2) One explains in terms the child can understand, simple methods of assistance, such as limited fluids, star charts, etc. (3) The adjustment of the environment to remove, as well as possible, stress and strain which appears to be the basis of the trouble. These are often obvious, such as instruction regarding discipline, feeding care, etc. Much can be done by praise on the part of the teachers as well as parents. Arrangement of the school program to fit the child's ability is important. The use of supervised play, and in older children, various clubs and organizations help to supplement environmental handicaps.

The results in these twenty-five patients treated as outlined are as follows:

Entirely stopped	13
Improved, but still under treatment	8
Unimproved, but still under treatment	2
Unimproved (refused to cooperate sufficiently to treat)	2
	25

The results depend upon one's ability to secure cooperation. In this series 84 per cent were either cured or improved. Like most figures of this kind, they have little value. A knowledge of the innumerable factors in each case is essential for the understanding of the reasons why improvement occurred or did not occur, as pointed out by Beverly[7].

Treating the patients as a psychobiological unit, and the enuresis as a symptom is the essential aim. The main approach is to determine the other symptoms and find the underlying cause. Just as vomiting ceases when the underlying cause is eradicated, so enuresis disappears when the cause can be removed.

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Medical Arts Building.

DISCUSSION

DR. WILLIAM P. MCDOWELL, Norfolk: The subject of enuresis may seem a very simple one to be presented before such a distinguished group. The papers which you have heard this morning have all dealt with rare or unusual conditions, but Dr. Bickford has brought to your attention a condition which is of very real practical importance. To those of us who deal with young children, enuresis is a condition which may assume an importance of great magnitude and is calculated to give

rise to a great deal of annoyance to the smooth routine of a household. Not only does it annoy the parents but it shames the child and not infrequently gives rise to real psychologic disturbances in the patient.

Very few cases of enuresis have an anatomic or urologic etiology. The large majority are due to infantile habits which have been brought over into childhood, or the habit may be a rebellious expression to some environmental condition to which the patient objects. Many are the therapeutic measures which have been suggested and tried in an effort to control the conditions but with very unsatisfactory results.

During the past year I have followed, with much interest, the group of enuretic children which Dr. Bickford has had under his care at the King's Daughters Clinic and I have been very much impressed with the results which he has obtained. He has pointed out to you the necessity of a careful history taking in an effort to obtain all of the factors which may have a bearing on the case, then the necessity of obtaining the confidence of the patient and cooperation of the parent or guardian. This requires patience and tact.

Quite a large number of these cases of enuresis can be cured just so soon as the patient is convinced that he is the victim of a bad habit and that it is within his own will power to overcome the habit. This fact has been demonstrated to me during the past summer. Two boys came under my care, ages nine and eleven, they were both fine chaps but they had been troubled with "bed wetting" for several years. They both wished to enroll as members of a boys' camp but the rules of the camp forbid any boy to remain who was a habitual bed wetter. The matter was explained to them and they were allowed to go on probation. They spent the entire month in the camp without wetting their cots a single night, and since their return home their enuretic act has not been re-established.

I wish to congratulate Dr. Bickford on the results which he has obtained and to thank him for bringing this practical subject for our consideration.

QUESTION: Were these two boys brothers?

DR. MCDOWELL: No.

DR. W. B. MCILWAINE, Petersburg: I enjoyed the paper very much. We realize, of course, that the modern approach to the problem of enuresis is from a psycho-analytic standpoint. This condition, I feel, does not have to arise if doctors are careful of two simple suggestions, one is the prolonged use of diapers. You may have seen, I certainly have, too many mothers who use the diaper for too long a time. They let the children go all day and they don't wet at all, but put on the diaper at night and they wet continuously. Very often simply discontinuing the use of the diaper will stop enuresis. Another cause is the prolonged use of the bottle. Many others will feed the child from the table during the day and give it the bottle at night. If this bottle is discontinued, very often the bed-wetting habit will stop. The treatment outlined by Dr. Bickford as to history and management was very interesting to me and I wish to thank him for his paper.

DR. BICKFORD, closing the discussion: I do not believe I have anything else to add, except that certainly the suggestion on prophylaxis is a very timely one. It will save a great deal of trouble later if we can prevent enuresis before it starts.

PERFORATING WOUNDS OF THE CHEST.*

J. COLEMAN MOTLEY, M. D., F. A. C. S.,
Abingdon, Va.

As a basis for any discussion of chest injuries, a brief review of thoracic anatomy and physiology seems essential. The thorax is a cage of bone and cartilage with an arched muscular floor. All of its walls are freely movable except the backbone. The bony walls of the chest afford very inadequate protection to the enclosed viscera. Numerous factors make thoracic wounds differ from injuries elsewhere. The thorax contains the heart and many large, thin walled vessels. Hemorrhage may be largely concealed. Injury to great vessels so near the heart may cause sudden and rapid fall in blood pressure with overwhelming shock. The lungs completely fill the pleural cavities except for a small amount of fluid which moistens the pleural surfaces. Normally the pleural space is only a potential cavity. Within the pleural space there is negative pressure. Inspiration is produced by this negative pressure. Expiration results from elevation of the diaphragm and contraction of the chest walls, thus compressing the lungs and forcing the air out. When the lungs have once been inflated it is practically impossible to get all of the air out. That which remains in the lungs after forced expiration is residual air. The air which is taken in during normal respiration is called tidal air. The additional air which may be taken in by a forced inspiration after an ordinary inspiration is called

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complemental air. Air expired by a forced expiration after an ordinary expiration is called supplemental air. The sum of these last three is known as the vital capacity.

Briefly, the vital capacity is the greatest amount of air which can be exhaled after the deepest possible inhalation. A correct understanding of the negative pressure in the chest and the vital capacity factor of the patient are of the utmost importance in thoracic surgery. Vital capacity varies greatly in different individuals and is influenced by many conditions. The ability of an individual to withstand the effects of an open pneumothorax varies fairly accurately with his vital capacity. If one's vital capacity is only equal to the tidal air, any opening in the chest wall will be fatal.

The heart is situated in the inferior mediastinum. It is enclosed in the pericardium. The lung overlies all but a small portion of the pericardium. It is the area not covered by the lung which is of special surgical importance. The pericardium is a fibro-serous sac, normally containing about 25 cc. of clear fluid which acts as a lubricant. It is fairly inelastic except when subjected to pressure over a long period of time. This is a very important factor to remember when treating wounds of the heart. Sudden increase in intra-pericardial pressure decreases arterial tension and increases venous pressure. If the intra-pericardial pressure continues to increase, it shuts off entirely the flow of blood to the heart and death quickly occurs. Large wounds of the pericardium permit the escape of blood into the chest cavity and thus relieves the intra-pericardial pressure. In small bullet wounds and stab wounds, the opening in the pericardium is usually plugged by a blood clot or by adherent overlying tissue.

Experimentally, the injection of 150 cc. of fluid into the pericardium of a dog has proved fatal. In a case of stab wound of the human heart, an accumulation of 250 cc. of blood in the pericardium caused death. A full appreciation of the effect of this "heart tamponade", is essential in the treatment of cardiac wounds. Prompt suture of wounds of the heart is now the approved therapy. Perhaps in no other emergency is immediate operation so imperative. One should bear in mind that so long as there is any cardiac function at all there is a chance to save the patient's life, for, as soon as the heart tamponade is released, the heart almost immediately bounds into normal action.

For the purposes of this discussion, perforating wounds of the chest may be divided into sucking wounds and those that are nonsucking. In the case of stab wounds and small bullet wounds, the tissues contract and fold into the wound and a blood clot plugs the opening in the chest wall. The gravity of the emergency depends on the damage that is done to the thoracic viscera, the amount of infective material such as pieces of clothing, etc., carried in by the missile, and the extent of the hemorrhage produced by the injury. Open pneumothorax is not a problem. Large sucking wounds such as those produced by shell fragments, pieces of metal in boiler explosions and close range shot-gun charges, are characterized by open pneumothorax, partial or complete pulmonary collapse, and mediastinal flutter. Such injuries are exceedingly grave.

In either type of wound we may have to deal with trauma of the lung, the heart, the large blood vessels, the azygos vein or the thoracic duct. There may be an associated wound of the diaphragm with abdominal contents herniated into the chest.

Hemorrhage varies within wide limits. There may be hemoptysis, hemothorax, hemopericardium, hemorrhage into the lung tissue and open bleeding from the wound in the chest wall. The amount of blood coughed up bears no relation to the total blood loss. The amount of bleeding from the chest wall is rarely serious. Large hemorrhage may occur through a sucking wound but it usually results from bleeding inside the chest. The lung may be herniated through the wound in the chest wall. This may be a fortunate complication, as it prevents the distressing symptoms of open pneumothorax. In such a case the herniated lung should be left undisturbed until the patient can be put on an operating table where there are adequate resources for the treatment of so grave an injury. Massive collapse of the lung may occur. This may be on the injured side or contra-lateral. The entire lung may be collapsed or only one lobe. The symptoms of massive collapse of the lung are fairly characteristic. They are: Cyanosis, dyspnea, elevation of pulse and temperature, rapid respiration and cough. Blood streaked or mucopurulent material is coughed up. Of course, the diagnosis can be easily confirmed by X-ray.

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In civil practice, by far the most frequent, foreign bodies found in the chest are pistol and rifle bullets. Removal by the aid of X-ray localization is confusing and somewhat difficult because the lung collapses when the chest is opened, and, naturally, the missile will be in a different place than that revealed by the X-ray.

Among the complications of penetrating wounds of the chest may be listed: Infection of the chest wall; empyema; lung absess, rarely, and secondary hemorrhage from sloughing. Pleural effusion is very common. Thraumatic pneumonia does occur, but it is my impression that this condition is somewhat rare. Hemorrhagic infiltration of the lung, hemothorax, atelectasis, etc., produce symptoms resembling those of pneumonic consolidation and often lead to a mistaken diagnosis.

TREATMENT

There are rare occasions when a perforating wound of the thorax presents indications for immediate surgery just as urgent as does an abdominal perforation. In the great majority of cases, however, masterly inactivity and watchful waiting will be the best plan. Wherever there is an open pneumothorax it is urgent that the hole in the chest wall be immediately plugged with the most efficient means available. In lacerated wounds of the chest wall, all torn, crushed and devitalized tissue should be trimmed away—debridement. The patient should be given sufficient morphine to relieve his pain and his anxiety. The lung should be splinted and the injured side of the chest should be immobilized, as far as possible, by thorough strapping with adhesive plaster.

Wounds of scattered shot from a shotgun should be treated expectantly. Where the whole mass of shot tears into the chest at close range, the wound is usually fatal. If a patient lives long enough for a doctor to see him, he is so badly shocked that there is but little that you can do for him except stop up the hole with gauze packing and adhesive strapping and treat his shock. Glancing, close range shot-gun wounds require sterilization, debridement and closure of the opening in the chest wall. Do not drain perforating wound of the thorax. Perforating wounds involving the chest and left abdomen usually require operation. Combined perforating wounds of the right upper abdomen and thorax can sometimes be successfully treated expectantly. At times there has been controversy in regard to the necessity of removing small foreign bodies, such as bullets, from the chest. It has been my experience that a bullet rarely does any harm after it stops moving. If the chest has to be opened for some reason other than the presence of the foreign body, it is usually best to remove the bullet if it is fairly accessible. Generally speaking, I would not do an immediate thoracotomy for the purpose of extracting a bullet. If the presence of the bullet causes complications later on, such complications can be met when they occur.

The question of anesthesia in chest surgery has also been the subject of a good deal of discussion. The expensive and elaborate differential pressure cabinets formerly used are unnecessary. If one wishes to do so, the lung can be inflated with a small foot bellows and a piece of rubber tubing while giving drop ether anesthesia. The same thing can be done with the ordinary gas-oxygen apparatus. Personally, I have found it quite practical to do chest surgery with paravertebral and field block anesthesia of novocaine. General anesthesia has not been necessary in the majority of cases.

I have tried to make this paper practical. With that thought in mind, I shall very briefly review a few illustrative cases, indicating the treatment in each case.

Case 1. About twenty-eight years ago, while working in a hospital at Welch, W. Va., a Negro boy was brought to the hospital with a stab wound in the left chest. The history indicated that he had been stabbed with a pocket knife by another Negro, and the knife blade broken off and a part of it left in his chest. Fluoroscopic examination revealed a fragment of the knife blade about 2 cm. in length sticking in the left wall of the heart near the apex. Prompted by the pioneering spirit of youth. I took the boy immediately to the operating room, opened his left chest and exposed the area of the heart containing the knife blade. There was very little bleeding. When, however, the knife blade was grasped and pulled out, there was an immediate gush of blood from the wound. By plugging the hole with the finger and squeezing the flapping, wriggling cardiac apex between the thumb and remaining fingers, I was able to control the hemorrhage until I could close the wound with a figure of 8 suture of catgut. The boy made a fairly smooth convalescence and was discharged from the hospital

in about twelve days. The fact that this boy's life was saved was not due to the skill of the very young and inexperienced surgeon but, rather, as Sergeant Spriggs would say, to the very "windictiveness" of his assailant. His antagonist had such a determined purpose to "cut his heart out" that in the fury of his assault he broke off the knife blade which plugged the wound in the heart, and prevented fatal hemorrhage until the blade could be removed and the wound sutured.

Case 2. H. G., a man of twenty-two, admitted to Johnston Memorial Hospital, Abingdon, Va., March 3, 1929. He was shot through the right chest with a .38 caliber revolver two hours before admittance. The patient was pale, not cyanotic. Radial pulse fairly good. There was a wound of entrance one inch to the left of the twelfth dorsal vertebra; a wound of exit just beneath the outer end of the right clavicle. Profuse bleeding from wound of exit. Marked crepitation beneath the skin around the anterior auxillary fold. Wounds were sterilized and dressed; gauze packed into the wound of exit and a sterile gauze compress tightly strapped over it to control hemorrhage and prevent open pneumothorax. The right chest was strapped with adhesive. Fifteen hundred units of antitetanic serum given. Morphine, gr. 1/6, given every four hours S.O.S. to make him comfortable, and shoulders propped up on low back rest. He made a fairly uneventful convalesence. March 13th he left the hospital by way of the bathroom window, dodging the sheriff.

Case 3. G. N. C., a seventeen-year-old boy, was admitted to the Johnston Memorial Hospital, October 17, 1924. He had had some emotional encounter with his father and shot himself through the left chest with a .22 caliber rifle. When seen by Dr. Baughman, his family physician, he was in a condition of profound shock. His skin was cold and clammy and he was almost pulseless. When he reached the hospital, his condition of shock had somewhat improved; but he was pale and cyanotic, his pulse was 120 to the minute and the volume very poor. The wound of entrance was near the left nipple just over the fifth rib. The bullet could be felt in the soft tissues beneath the angle of the left scapula. The whole left chest was dull. X-ray examination revealed a diffuse shadow involving the whole left chest. This was regarded as an extravasation of blood into the pleural cavity.

The wound was sterilized and the left chest tightly strapped with adhesive. He was given morphine and proctoclysis of normal salt solution and propped up. October 31st, the bullet was removed from the back and 500 c.c. of old blood was aspirated from the pleural cavity. November 5th, he was discharged, convalescent. In answer to a follow-up letter one year later, he wrote: "I am well."

Case 4. K. S., a young man aged twenty years, was admitted to the Johnston Memorial Hospital, April 3, 1931. (This case is reported a little more in detail because it illustrates some of the complications encountered in treating chest wounds.) This man had been shot through the right chest with a .32 caliber revolver about three hours before admittance to the hospital. He was in extreme shock. Radial pulse almost imperceptible. Extremities cold. Bullet wound of entrance dorsal surface right chest, three inches lateral to spine and opposite the eleventh dorsal vertebra. The bullet could be felt beneath the skin in the right midclavicular line on a level with the nipple. The whole right chest was dull. No breath sounds could be heard except at the apex.

External heat, morphine and the usual measures for combating shock were applied. Wound in the back was sterilized and dressed. Right chest was strapped with adhesive. Later, X-ray examination showed the entire right lung field obscured by a uniform and completely opaque density. The heart shadow was displaced to the left and greatly enlarged. The enlargement was of a "water bottle" type, suggesting fluid in the pericardium. There was some temporary improvement in his condition. April 5th, his temperature was 103; pulse almost imperceptible, and general condition very rocky. April 6th, his temperature was 105 degrees.

Another X-ray examination showed evidence of a massive collapse of the right lung and a large hemothorax in the right pleura. The heart was still markedly displaced to the left. Because of the cardiac embarrassment, his fluid intake was limited and the pressure of the hemorthorax was gradually released by repeated aspirations over a period of several days, about 250 c.c. of old blood being withdrawn at each sitting. April 10th, he was expectorating large amounts of purulent material. The foot of his bed was elevated to procure postural drainage. April 18th, the bullet was removed from his chest wall. He made satisfactory

XUM

progress from this time and was discharged from the hospital May 4th, convalescent.

Case 5. A white male, age thirty, was admitted to the Johnston Memorial Hospital with an axe wound of the left chest of about three hours' duration. Condition fairly good. There was a penetrating axe wound, dividing the seventh, eighth, ninth and tenth ribs and costal cartilages, left, extending from the mid-axillary line downward and forward to the subcostal area about one inch to the left of the xyphoid cartilage. The wound was sterilized with green soap, ether and dichloramine-T; a field block of novocaine was made, and a thorough debridement was done. The wound was retracted by a rib spreader and the pleura illuminated by a Cameron light. The lung was collapsed, lying high up in the pleura and apparently uninjured. The outer angle of the pericardium was divided and the apex of the heart could be plainly seen. The wound extended down to the insertion of the diaphragm, but the abdominal cavity was not opened.

The pericardium was repaired and the blood removed from the pleura with a suction machine. The costal cartilages were sutured together with chromic catgut, and the chest wall closed in layers. Just as the last skin suture was placed, the patient had an attack of projectile vomiting, and the gastric contents spurted all over the wound. The operative field was again scrubbed up as before, and a sterile dressing applied. The left chest was strapped with adhesive. There was clean primary healing of the wound and the patient made a smooth convalescence. Replying to a follow-up letter a year later, he wrote: "I am well except that I have ulcers of the stomach."

Case 6. A white man, age twenty-seven, was admitted to the Johnston Memorial Hospital, August 17, 1935, on the service of Dr. H. M. Hayter. He was suffering from a pistol shot wound of the right abdomen and chest of about four hours' duration. He was badly shocked. His blood pressure was too low to register and the radial pulse could not be accurately counted. The wound of entrance was just below the twelfth rib on the right side. The bullet was located by X-ray in the anterior part of the right chest just back of the tip of the seventh rib. The twelfth rib was shattered and small fragments of bone scattered through the right upper abdomen. From the course of the bullet it was evident that it had passed through the liver. The patient was given morphine, 500 c.c. of 10 per cent glucose intravenously and 1500 c.c. of saline solution by hypodermoclysis. He rallied from the shock and slowly improved. Fluid developed in the right pleura. X-ray examination August 29th showed the entire right chest obscured by heavy opaque density. August 30th, 1400 c.c. of deeply bile-stained fluid was aspirated from the right pleura. September 3rd, 1425 c.c. of the same character of fluid was removed, and on September 6th, 650 c.c. His right pleura was again aspirated on September 13th and 500 c.c. of bile-stained fluid removed. He was discharged September 16th, convalescent.

Case 7. A white man, age twenty-two, admitted to the hospital September 20, 1935. Accidental shot-gun wound of right chest, incurred while squirrel hunting. The entire load of No. 5 shot entered the chest wall in lower part of right axillary space at almost contact range. The wound of entrance was not much larger than a 50-cent piece. He was coughing up blood and was moderately shocked. General condition fairly good. He was operated on under regional and field block anesthesia of novocaine. The charge of shot had ranged upward and backward, blasting away the chest wall subcutaneously. Parts of the third, fourth and fifth ribs were shot away, and the pleura was widely opened. The entire tract of the wound was laid open and a mass of gun wadding was removed from beneath the right scapula. A thorough debridement was made of all mangled and devitalized tissue; the pleura was sutured with chromic catgut; and the chest wall closed in layers without drainage. The right chest was strapped with adhesive. Fifteen hundred units of A. T. S. was given. X-ray examination September 24th showed the whole right upper chest full of scattered shot, the right lung collapsed, the third, fourth and fifth ribs shot in two, and the pleura filled with air. It was deemed best to leave the pneumothorax undisturbed, as it acted as a good splint for the lacerated lung. The man made a fairly smooth recovery and was discharged from the hospital on October 7th.

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ON THE TREATMENT OF INGUINAL HERNIA.

By DR EDUARD BASSINI,
Professor of Clinical Surgery at the Royal University of Padua.
(*Archiv. fuer Klinische Chirurgie*, 40:429-1890).
Translated by CHARLES R. ROBINS, M. D., Richmond, Va.*

After all that has been written with such feverish industry during recent years and up until today on the radical treatment of inguinal hernia, it can well appear venturesome to wish to publish anything additional on this subject. I decided on this only because by demonstrated facts and by industrious clinical investigations, I am able to throw light on this difficult and delicate subject. The principle which guided me is an entirely rational one and responds to the demands of the anatomy of the inguinal region and of inguinal hernia and to its radical treatment.

The latest works on hernia and its treatment, namely, that of Wood, Von Segond, von Lucas-Championiere, and the monographs of different authors on this subject relieve me of the duty of treating of the history of the operation and, further, of the anatomy of the inguinal region and of the hernia itself, since already this has been extensively written upon, and I can add nothing new to the known facts.

The Czerny operation is applied to all inguinal hernias as well with the reducible as with irreducible and strangulated. Antisepsis removes the danger from the operation. But this method shows frequent recurrences, or this would arise if the operated patient did not wear a truss. Maas, in Freiburg, examined many persons who had been operated by him and by Czerny who had recurrence. Czerny, Socin, von Langenbeck, Billroth, Reverdin and others confirmed frequent recurrences or serious danger of it. Julliard (Segond, Cure Radicale des Hernies, Paris, 1883, p. 214-215) had only a single radical cure in twenty-two operations. All the others who had been operated needed to wear a truss because otherwise the hernia threatened to recur.

I operated after Czerny's method on three inguinal hernias of medium size, but those operated upon were required to wear a truss to prevent threatened recurrence. Lucas-Championiere (Cure Radicale des Hernies, Paris, 1887, p. 83-87) explicitly proposes the use of the truss after radical operation and explains that it is indispensable, and regards this as a factor in healing. It is clearly shown by this that the patient is exposed to the danger of recurrence of the hernia as soon as the use of the truss is discontinued. Based on the above considerations, I had already thought in the beginning of the year 1883 to modify the operative procedure for inguinal hernia in order to effect a radical cure in such a way as to make it unnecessary for the patient to wear a truss after the operation.

I operated seven times in the following manner:

After opening the anterior wall of the inguinal canal at the place where the hernia was found, I isolated the neck of the sac up to the abdominal (internal) inguinal ring. Here I applied a ligature, extirpated the fundus and base of the sac and left only the neck behind. After the ligature of the neck at the above-mentioned point, I sewed it to the posterior surface of the aponeurosis of the external oblique in the region of the abdominal ring, and with the portion of the neck of the sac immediately beneath I formed to a certain extent a tampon or organic stopper against the inguinal canal. Lastly, I sutured the aponeurosis of the external oblique and then the skin. Of those operated, six recovered in a short while and one died ninety-five days after the operation. The wound was com-

*In a study which I made of inguinal hernia, I could find no adequate description of Bassini operation in the English medical literature available to me. There is probably no operation that is more frequently referred to, and yet I am convinced that the ordinary conception of it is concerned with only the method of dealing with the cord. As a matter of fact, certain parts of the technic are duplicated in more modern operations without the authors apparently being aware that they were a part of the original Bassini operation. For these and other reasons, Bassini's original description of his operation is a matter of interest.

Bassini attempted several types of operation before finally adopting the standard operation which bears his name. His first publication was in Italian. This is not available. In 1890 he published a second paper in the *Archiv. fuer Klinische Chirurgie*. The translation of this herewith submitted is not a complete one. The original paper is quite lengthy and includes a clinical report of 262 cases. In this translation only enough is given to indicate the steps leading up to the operation and to make clear the steps of the operation itself. This is aided by the presentation of the original illustration which has been redrawn.

XUM

pletely cicatrized and death followed from a sickness which had no relation to the hernia and the radical operation. Section convinced me that the neck of the hernial sac, which had been sutured in the thickness of the abdominal wall behind the aponeurosis of the external oblique, had completely disappeared by resorption. From these first methods of operation for the radical cure of inguinal hernia there resulted conditions that were entirely analagous to those of Wood and Czerny methods, that is, the hernial opening was closed by only a single layer of cicatricial tissue and this was blended with the aponeurosis of the external oblique and penetrated by the spermatic cord. If the others who had been operated by me in this way wore no truss they had to fear a recurrence. (He reports two cases of recurrence and states): The recurrence was the natural consequence of the operation applied, for my first method of operation for the radical cure of inguinal hernia offered no better protection than that of Wood and Czerny, that is, merely a resisting cicatrix of the abdominal wall through which the spermatic cord passed.

But if the radical operation for hernia demands the subsequent use of a truss, it is, notwithstanding the great advantage of the operation, reduced merely to the fact that the hernia is held back and that the truss is more easily borne by the patient than was formerly the case. This knowledge, gained by my own operations and by the experience of others, showed me the necessity of another operative method in order to attain the radical cure of hernia and to make this sure. I conceived the idea that by reconstruction of the inguinal canal as it is physiologically, that this could be brought about, that is, a canal with two openings, one abdominal and one sub-cutaneous; further with two walls, one posterior and the other anterior, through which the spermatic cord would pass obliquely. By experiments on the cadaver with the help of anatomic knowledge of the inguinal canal and of inguinal hernia, it was easy for me to find a method of operation which corresponded to the above-mentioned requirements, and made possible a radical cure which did not require that a truss should be subsequently worn. After this method, which I have used exclusively since the year 1884 and which I now present, I have operated on two hundred and sixty-two hernias of which a portion were free and reducible and a portion irreducible, and eleven were strangulated.

Before I report on the results of the operations, it is appropriate to first give a description of the technic of the operation. In the acquired external inguinal hernia I operate in the following manner.

The patient is deeply anesthetized, and, as a matter of course, prepared with strict antisepsis. I incise the skin covering of the herniated inguinoscrotal region, expose the aponeurosis of the external oblique and, of course, in a location which corresponds to the inguinal canal (opening of the hernia) and expose in this way the pillars of the subcutaneous inguinal ring and control the bleeding. This is the first step of the operation.

In the second step I divide the aponeurosis of the external oblique, beginning at the external inguinal ring and extending above the region of the internal inguinal ring, separate the aponeurosis of the external oblique above and below in the form of two flaps and isolate and elevate *en masse* the spermatic cord and the neck of the hernial sac. While I hold the index finger under the mentioned structures, I isolate the neck of the hernial sac from the elements of the spermatic cord up to the opening of the hernia. The isolation of the neck of the sac must extend up to the iliac fossa, that is to the mouth of the sac itself. Immediately after that I isolate the body and fundus of the sac, bend it outward, open the fundus of the sac and examine if the contained intestines show adhesions or not and if the omentum is thickened. In the first case I release the adhesions and then push the omentum back as far as is necessary. After reduction of the intestines I twist the neck of the sac and apply a ligature just above its mouth. If the hernia is very large so that the neck and orifice of the sac are wide, I apply, in addition to the simple ligature, another below and external to it, that is carried through the tissues and divided in two parts and tied, in order to make the closure more secure and prevent the slipping of the first ligature. The peritoneum tied in this way draws itself back in the iliac fossa. With the extirpation of the sac and the ligature of the same on the proximal side of the orifice the second step of the operation is ended.

In the third step I turn the isolated spermatic cord out of the way by drawing it gently upward on the abdominal wall, and if necessary drawing the tes-

ticle out of the scrotum with it. With sharp wide retractors I have the lower flap of the aponeurosis of the external oblique drawn downward and the upper flap upward. In this way it is easy to expose the groove which is formed from Pourpart's ligament up to its posterior margin and one centimeter beyond the point where the spermatic cord emerges from the iliac fossa. After this I loosen the outer edge of the rectus muscle and the threefold layer (which is formed from the internal oblique and transversalis muscle and the transversalis fascia) from the aponeurosis of the external oblique and from the subserous fatty connective tissue, until the above-mentioned threefold layer can without difficulty be approximated to the posterior margin of Poupart's ligament. I then sew these two parts together with interrupted sutures—to be exact, for a space of 5-7 centimeters—from the crest of the pubes outward toward the spermatic cord that is displaced approximately one centimeter toward the anterior superior spine of the ileum. With this the third step of the operation is completed and the inner or abdominal opening and the posterior wall of the inguinal canal is restored.

In the above-mentioned suture it is advisable to use interrupted silk and to include 2-3 centimeters from the margin of the threefold musculo-aponeurotic layer. The first two sutures are applied close on the pubic bone and embrace also the external margin of the rectus muscle. After this step of the operation is ended, if the patient is stimulated to rupture the suture line (I have tried this in my first fifty cases), one can observe that the inguinal region is able to withstand the hardest intra-abdominal pressure, and that when the site of the fixation of the threefold musculo-aponeurosis layer to Poupart's ligament is put on tension, it continues fixed in its new location.

In the fourth step of the operation I lay the spermatic cord back in its position and also the testicle, unite the aponeurosis of the external oblique with sutures to where the edges of the crura are approximated over the spermatic cord, and then unite the skin and finally apply the bandage. I use drainage only in very voluminous old hernias where the dissection and isolation of the hernial sac is very difficult to accomplish.

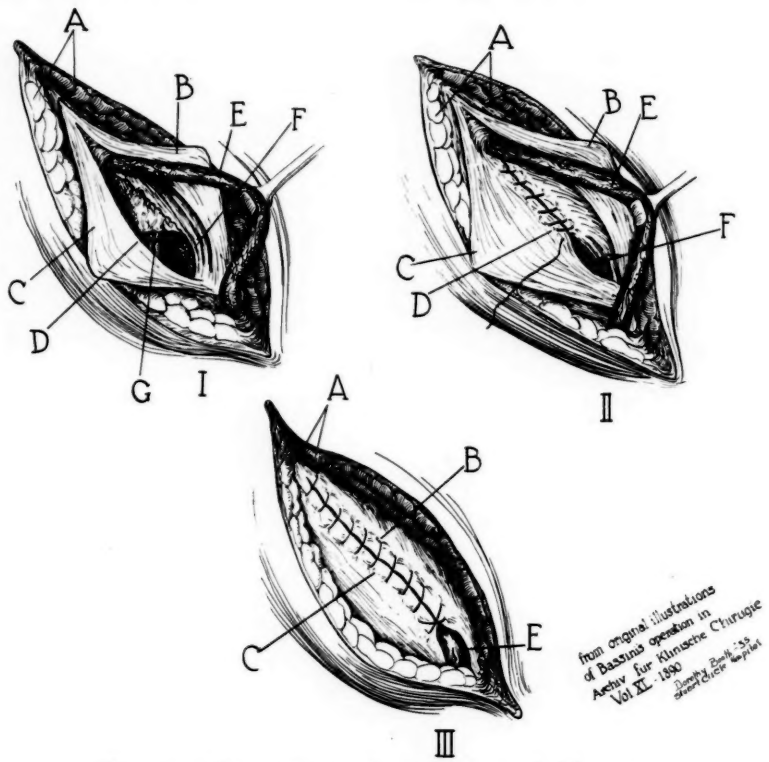
In this manner the inguinal canal is restored with an inner opening and a posterior wall, both formed from the threefold musculo-aponeurotic layer fixed to the posterior margin of Poupart's ligament and making a groove; and with an anterior wall with a small external or subcutaneous opening formed by uniting the flaps of the aponeurosis of the external oblique. In external inguinal hernia, especially if it has a certain size, the inguinal canal loses its oblique direction and becomes direct. By the described operation it recovers its natural direction, and the spermatic cord, which is easily displaced outward, penetrates obliquely the abdominal wall in a location where the canal is newly formed. The suture lines do not approximate each other, the posterior remains under and the anterior over the spermatic cord.

If the inguinal hernia is congenital it has no sac of its own but forms in the peritoneal process and in the tunica vaginalis of the testicle. It can remain on the spermatic cord (hernia congenita funicularis) or it can descend to the testicle (hernia congenita testicularis). In the first case I extirpate the peritoneal process that becomes changed to the hernial sac; in the second case, I excise the peritoneal process and the tunica vaginalis (hernial sac and neck of the hernia) and leave only that part of the serosa behind that covers the testicle, and this is fastened to the gland. In both cases the operation is ended as above. When ectopia of the testicle exists (undescended testicle) I release it and stretch and unfold the spermatic cord as far as is possible. After the posterior wall and the abdominal opening of the canal have been newly formed, I pull the testicle down and fasten it by means of a suture to the base of the scrotum.

If the inguinal hernia is an inner, that is a direct hernia, a so-called Hesselbach's hernia, one must modify the method of handling the hernial sac, because this exists under entirely different conditions than in the external or oblique inguinal hernia. The inner or direct hernia arises at the inner inguinal fossa and descends on the inner side of the deep epigastric vessels. It is usually small or of medium size and only seldom voluminous. The hernial opening is formed from the superficial or subcutaneous hernia ring, the sac has a wide orifice and in comparison with that a short neck, which from behind forwards runs obliquely over the spermatic cord. The fascia verticalis (transversalis fascia) is as I have observed in the majority of cases not penetrated but is pushed forward by the fundus of

XUM

the sac and distended in the form of a sac by the hernia. As soon as the direct inguinal hernia has reached a certain size the inner circumference of the neck rests on the external edge of the rectus abdominalis muscle. If the hernia increases the opening, the neck widens externally toward the epigastric vessels and at last forms a part of the sac on the other side of the epigastric artery, so that the sac itself in its outer portion is divided into two parts by the fold created by the epigastric vessels. On account of the above conditions, it is difficult and often impossible to form a pedicle from the sac in direct hernia and to ligate it at its boundary. On this account it is necessary after releasin the parietal peritoneum as far as the inner side the opening of the hernial sac, to open the latter an after reducing the intestines, to suture together th peritoneum in order to excise the flaps of the suture In consequence of the mentioned relations of the sa to the epigastric vessels, it is necessary in volumnious direct hernias to divide these vessels between two ligatures, to open the fundus of the sac and to suture it as I said before, and to cut away the flaps below the suture, because, otherwise, the portion of the sac external to the epigastric vessels would remain unchanged. The peritoneum sewed in this



Bassini Operation for Inguinal Hernia

EXPLANATION OF ILLUSTRATIONS

Fig. I.—Indicates the first part of the three essentials of the operation.
A. Subcutaneous fatty connective tissue.
B. The upper flap turned upward and elevated.
C. Lower flap of the aponeurosis of the external oblique.
D. Posterior margin of Poupart's ligament.
E. Retracted spermatic cord.
F. Epigastric vessels.

Fig. II.—Represents the end of the three essentials of the operation, i. e., the suture of the musculo-aponeurotic layer to posterior margin of Poupart's ligament. In the illustration the glover's stitch is represented, although interrupted stitches are to be used.

Fig. III.—Represents the fourth essential of the operation. The spermatic cord is laid back in its position. Above one may see the suture of the separated edges of the aponeurosis of the external oblique up to the approach of the edges of the cord. Also here the glover's stitch is indicated. although it is better to use the interrupted suture.

manner, draws back into the iliac fossa if left to itself.

In inguinal hernia in women the procedure is simpler because there is no spermatic cord, and the round ligament is excised, whether the hernia is congenital within the canal of Nuck or is acquired. In those cases of inguinal hernia in women operated by me in the above manner, I saw no disadvantage in consequence of the extirpation of the round ligament.

The accompanying illustration, which was very industriously prepared by Dr. Nodari, indicates the separate details of the method of operation.

In both cases, that is in external (acquired or congenital) or in internal hernias, the inguinal canal is reconstructed after the manner of its physiological formation, that is, with an abdominal and subcutaneous opening, of which the first lies external to the second, and is provided with two walls, one posterior and the other anterior. Under the influence of abdominal pressure, the new posterior wall is pressed against the anterior, and both support each other in order to withstand the continuous and strong impulse of the abdominal viscera, while the spermatic cord is permitted to pass through between them. The new abdominal opening and the new posterior wall of the inguinal canal are formed from muscular and aponeurotic tissues which functionate and therefore cannot disappear by resorption. That the parts, after wound cicatrization, show the same relation as immediately after the operation is demonstrated through the following observation:

Hernia is a mechanical sickness caused by displacement of the abdominal viscera. Now, in order to arrive at a radical cure, it is indispensable, in the region where the hernial opening is found, to restore those conditions which govern under normal relations. Every one knows that the inguinal canal functions under physiological circumstances in a manner which permits the spermatic cord to pass through and at the same time holds the viscera back, because the canal is formed of two walls and the cord runs obliquely. Under the action of abdominal pressure the posterior wall is forced against the anterior and acts as a valve. The abdominal wall is in this way closed and the spermatic cord is not pressed upon. Now in order to make a radical cure of inguinal hernia possible, it is indispensable that the original physiological type of inguinal canal be restored. It seems to me that my method of operation responds to the above-mentioned demands in that it secures the mechanical conditions and the function of the inguinal canal.

He lists 262 cases operated and states that of 251 cases he had seven recurrences.

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THE HISTORY OF OBSTETRICS IN VIRGINIA.*

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Virginia lends herself particularly well to the study of the development of midwifery. In the first place its history is coeval with that of obstetrics. No advance in midwifery was made before the settlement at Jamestown except Ambroise Paré's version in 1555. If one were very industrious one might include an introductory chapter on Indian obstetrics that might well represent European midwifery before the discovery of America.

In the second place, Wyndham Blanton's excellent history of Medicine in Virginia, the researches by Dr. Joseph L. Miller and the research department of Colonial Williamsburg, Incorporated, make the task easier. The very presence of Dr. Miller's library, which is particularly rich in obstetrics, inspires one to know something of the history of obstetrics in Virginia.

In the third place, Virginia has been free from the disturbing influence of great medical centers. The prestige of the Massachusetts General Hospital undoubtedly caused the rapid adoption of anesthesia. Likewise, the obstetrical teachers in the great Philadelphia medical schools blocked the acceptance of the idea of the contagiousness of puerperal fever. In Virginia the medical schools were manned by general practitioners and what influence these men had was that of practitioners and not of professors. The two noteworthy exceptions, Brown-Sequard at the

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Medical College of Virginia and Robley Dunglison at the University of Virginia, only prove my point. Brown-Sequard served only two sessions in Richmond, and Dunglison soon gravitated at Philadelphia. And so the profession in Virginia was free to absorb and to adopt and to adapt to their needs the knowledge of obstetrics as it developed. The Virginia doctors at first were English, Scotch and to a less extent French. One, Dr. Seccari, who is said to have introduced the use of the tomato, was an Italian. At a later period they were native born, but educated in Paris, Leyden, Edinburgh, Dublin or London until the development of the two schools in Philadelphia absorbed most of the Virginia medical students. After the Civil War, Virginians received the greater part of their medical training in their own schools. The point is, they were well-trained. On the other hand, they worked in frontier conditions. They had to meet their difficulties and emergencies as they arose more or less single-handed. One of the first effects of the frontier was the doing away of the artificial restriction in medical practice. There were no divisions between physician, surgeon, and apothecary that existed in England at the time. Only the midwife had her field to herself, at least for a century and a half. Another surprising thing is the amount of consulting that the old Virginia doctors did. Few cases are reported that did not have several consultants, apparently all that were available. Occasionally a case is reported in which the doctor regrets that no consultant was to be had. The third surprising thing is the little recognition the Virginia doctors received for the discoveries they made in obstetrics and gynecology. This was noted in the obituary notice of Dr. William Baynham. Of the 197 Virginia doctors writing upon obstetrics and gynecology, only twenty-two are mentioned in Kelly's Cyclopedia of American Biography, and sixteen of those had reputations as soldiers.

One is tempted to trace the careers of Virginians who have made names for themselves outside of Virginia—men like Moses Montrose Pallen in St. Louis, Thaddeus Asbury Reamy in Ohio, Richard Beverley Cole in California, Thomas Ashby and William Travis Howard in Baltimore, Henry Davidson Fry in Washington, Robert Mendenhall Huston, Mordicae and Joseph Price in Philadelphia, W. R. Pryor, George Tucker Harrison, LeRoy Broun and Thomas A. Emmet in New York. This would carry me too far afield. Nor will I take up your time with a discussion of the many priorities of Virginians: The first Cesarean section in America in 1794; the first uterine sutures in a Cesarean section in 1828; the first Dührssen incisions (before Dührssen was born); the first immediate repair of the cervix (by the son of a Virginian); the first episiotomy; the first description of puerperal malarial fever, etc. These are no doubt well-known to you and are beside my purpose tonight. Rather would I trace as best I can the kind of obstetrics practiced in Virginia from time to time.

For the purpose of description, it is convenient to divide the period into two parts, before and after the advent of the man midwife. This took place in Virginia about 1750. A third division suggests itself, that after the advent of the specialist, but as all the Virginia specialists in this field, save one, are still alive, such a section would not properly come under the head of history.

For nearly a century and a half the midwives had entire control of obstetrics. Not only did they deliver all the babies, but they held certain judicial duties. The courts appointed juries of midwives to pass on the question of pregnancy in condemned females. In 1640 a midwife administered an oath to a pregnant woman, and the child born in marriage adjudged another man's (Hening, William Waller, The Statutes at Large, Vol. 1, p. 552). They also dabbled in "cures" of all sorts. In 1766 Constant Woodson presented to the House of Burgesses a petition settling forth that she had discovered an effectual remedy for curing cancer which she for a valuable consideration will communicate to the Publick. The next year the House of Burgesses voted the sum of £100 to said Constant Woodson provided she produce a certificate as to the efficiency of her cure from under the hands of Doctors Theodrick Bland, James Feild, William Black and Robert Brown or any two of them. There is no record in the treasurer's office of any such sum being paid, so it is likely that Constant failed to convince the doctors.

None of the Virginia midwives had left her impress on history as happened in some of the Northern Colonies. We know their names only when there is some litigation about their fee. Twelve hens were paid the Widow Hollins in 1634 although she sued for eighteen. Goodwife Thorpe charged 100 pounds

of tobacco. Probably the best known midwife was Catharine Blaikley. The following notice appeared in the *Virginia Gazette* for October 24, 1771: "Deaths. Mrs. Catharine Blaikley, of this city, in the seventy-sixth year of her Age; an eminent Midwife, and who in the course of her Practice, brought upwards of Three Thousand Children into the World." She was buried in Bruton Parish churchyard.

There is no way of knowing with any degree of accuracy the maternal or fetal mortality. Both must have been high. Large families were the rule. Mention of the 20th child is not uncommon in the diaries of the time, which shows that some women at least survived a number of pregnancies. On the other hand, many women died young. William Allason's Letter Books record that of Mrs. Allason's almost annual pregnancies only one child survived, and she herself died early. One, a premature boy, was much afflicted with fits and died on the 26th day.

Mrs. Helen Bullock, of the Department of Research and Record, Colonial Williamsburg, Inc., tells me that inscriptions such as the following are not uncommon: "Here lies the Body of Mrs. Alice Page, wife of Mann Page, Esq. She departed this life on the 11th Day of January (1746) In Childbed of her Second Son In the 23d Year of her Age Leaving Two Sons and One daughter." . . .

Dr. M. C. Harris has collected for me the records of forty-four families before 1750. There were sixty-six wives, of whom four died shortly after childbirth. Of the 291 children born to these families, five died in infancy. No mention is made of stillbirths. Each wife average 4.41 children. An analysis of the section of Burgesses and other prominent persons of Tyler's *Cyclopedia of Biography* gives somewhat similar results considering the fact that usually only the children who grew up are mentioned. The average number of wives per man was 1.18, and the average number of children per wife was 2.57. (In 689 cases the number of wives are mentioned and their total was 814, and in 459 instances the number of children are recorded, their total being 1177.)

According to Blanton, the first evidence of a man midwife was in 1753 when it is recorded that Henrico County paid Gearrard Ellyson one pound for midwifery services. By 1782 the fee had advanced. Robert Carter of Nomini Hall (Mss. Letter Book, Vol. 5, 1782-4, page 74) takes exception to Dr. Thomson's fee for five pounds to visit and delivery of a Negro woman not because of the amount of the bill but because it was a charge against R. B. Carter. There is some evidence that doctors took at least an academic interest in obstetrics before 1750. Dr. William Webb's Inventory in 1738 (Book 18, Wills, Inventories, York County) listed instruments belonging to midwifery, but as they were valued at only 10 shillings they were probably of no great moment. The first medical fee bill (1736) makes no mention of obstetrics. In 1755 (Book 20, Wills, Inventories, York County) Dr. Kenneth McKenzie's shop listed the following books on obstetrics: Douglas' Midwifery 1/6; Astruc on Women Vol. 5, 18/; Chapman's Midwifery 3/9; State of Midwifery 1/6; Ledram's Operations 2 Vols. 10/; Mauriceau's Midwifery 5/; Daventay's, ditto 4/. In November, 1775, Dixon and Hunter, in the *Gazette,* advertised for sale, among others, the following books: Astruc on Midwifery, Manning on the Diseases of Pregnant and Child-Bed Women, Smellie's Theory of Midwifery, 3 Vols., Bracken's Midwifery, and Memis' Midwife's Pocket Companion. Dr. James Black is known to have had a copy of Sharpe's Midwifery. However, the commonest midwifery book of this period was "Of the birth of Mankinde," the English translation of Rosslins' celebrated book for midwives. Soon after 1750 we find many notices in the newspapers about men doing obstetrics: "Doctor George Gilmer intends pursuing, with the practice of Medicine, the art of Midwifery"—(*Virginia Gazette,* December 4, 1766). Dr. LaCourdre, French doctor, in Norfolk, advertised that he did all sorts of operations in surgery and man midwifery, particularly women when in imminent danger of life—(*Virginia Gazette,* July 14, 1768). William Coakley, in Norfolk, advertised that he would practice surgery, midwifery and physic—(Purdie and Dixon's *Virginia Gazette,* July 18, 1766). Dr. John Walker, of Hanovertown, was described as a "male midwife" when his effects were advertised for sale after his death in 1775—(Dixon and Hunter's *Virginia Gazette,* May 13, 1775). Hermann and Russell, of Richmond, advertised the same type of practice. For the reaction to such practice, see *Virginia Gazette* for 1772.

The earliest real achievement in obstetrics oc-

XUM

curred in 1794 when Dr. Jesse Bennett performed the first American Cesarean section. He performed it upon his own wife and the operation remained unnoticed in medical literature until quite recently. Dr. Joseph L. Miller gives a well documented accound of this operation. Dr. Bennett later moved to Mason county on the Ohio river, and as the operation was common knowledge there, Dr. Miller suggests that it may have influenced Dr. Richmond, of Newtown, Ohio, who is generally credited with the first Cesarean section. Dr. Hugh Trout further suggests that it may have influenced Ephraim McDowell. Dr. Humphreys, of Staunton, was a consultant in Mrs. Bennett's case and refused to operate. Dr. Humphreys was also the preceptor of Ephraim McDowell, and shortly after the operation was performed, McDowell must have visted Dr. Humphreys on his way back home from Edinburgh. It is only natural that they should have discussed such an unique operation. A more tangible evidence of the influence that these early American operations had is furnished by Sänger himself. Harris, writing in 1878, recognized and stressed the importance of early operation. He discussed the question of uterine suture and anesthesia and left these questions open. Sänger, in his classical monograph in 1882, recognized the importance of uterine suture as well as early operation, and in support of his thesis he gives a table of the sixteen American operations in which sutures had been used in the uterus. Interestingly enough, the earliest of these was performed by a country charlatan in Virginia whose name is unknown. It is reported by Dr. Weems who witnessed the operation. Other early Virginia Cesarean operations are by Dr. Brodie S. Herndon in 1845, Dr. Wm. G. Smith in 1855, Dr. Charles Mills in 1856 and 1867 upon the same patient, and by Dr. Edward Drew in 1856, Dr. James Parrish in 1875, and by Dr. J. T. Boutelle in 1879.

It is said that Dr. Drelincourt, the teacher of the celebrated Boerhaave, enumerated nearly 300 theories of conception, all of which were believed at one time or another. None of these seemed to have bothered Virginia doctors. They reported case after case of monstrosities, both in infants and adults, but not one word of embryologic conjecture. Two cases of twins of different color were reported in the Virgina medical magazines, but no discussion of superfecundation ensued. Dr. Mills, in reporting a case of hydatid, mentioned the medico-legal question as to where they were, or were not, the result of sexual congress. There are many hints of curious notions of the physiology of the fetus. Dr. James Bolton worked over an apparently dead new-born for three hours and forty minutes. During this time the placenta was left attached to the fetus for its stimulating effect. In 1874, Dr. Parker reported a case in which the baby and placenta were born in a bucket on which the mother was sitting. He reported the case because there was continued pulsation of the cord after the birth of the baby. Dr. Joynes, in the discussion, said that the pulsation resulted from the action of the fetal heart and that it ceased when respiration was established.

In 1851, Dr. C. R. Palmore wrote on the condition of obstetric practice in Virginia. At least one-half of the white and five-sixths of the black women were attended by midwives. He complained of their giving ergot and "forcing powders."

While they were not much on theory, the Virginia doctors were strong on therapy. Dr. John P. Mettauer reported in great detail a case of puerperal fever successfully treated. A delicate female servant, V-para, had been having fever in the last two months of her pregnancy. Her labor lasted sixteen hours. The abdominal parietes were so sore that each pain caused her great distress. When the membranes gave away and the liquor amnii dashed over the midwife's hands, the temperature of it was so high as to impart the sensation of a scalding heat, as the midwife expressed herself, and actually alarmed her. The woman too complained of the unusual heat of the waters. The midwife informed him that when she passed her hand into the cervix for the purpose of dislodging the placenta, its surface was exceedingly hot. He gives a good description of the case as it appeared when he first saw the patient. The treatment was "antiphlogistic." He bled her until fainting resulted, sixty ounces. An emetico-cathartic had been previously prepared and was then given. It consisted of ℥ss of senna, ℥i of jalap, ℥ii of Epsom salts, ℥i of anise seed infused in 0ss of boiling water, and boiled down to ℥iv. To the strained fluid grs. iii of tartar emetic were added. Fomentations were employed over the entire abdomen as hot as could be borne, and renewed every fifteen minutes. In the meantime an

active enema of strong salt water was employed. An artificial cholera morbus was produced. After the third alvine evacuation the fomentations were laid aside and the whole abdomen rubbed with spirits of turpentine and then covered with a blistering plaster. Twenty-three ounces more of blood were removed from the vein. The woman then fell into a sound slumber which continued until she was aroused by the drawing of the blister (some three hours). The drink consisted of cool pine tops tea. She was also given pounded ice, and he applied ice to the os uteri and cervix as well as to the hot dry vagina. As soon as the woman was fully awake, he administered 20 grs. of calomel and ¼ gr. tartar emetic mixed in brown sugar, washed carefully from the mouth with pine tops tea and swallowed. Two hours later an enema of strong salt water was administered. The blister was examined and found to be perfect. It contained 16 ounces of serosity when the various blebs were opened. A dressing of soft cabbage leaves was applied to the blistered surface. The woman fell into a sleep which lasted three hours and would have been still further prolonged but for the operation of the calomel. The abdominal tumefaction rapidly subsided, and all pain and tenderness disappeared. The pulse was now reduced to 90 per minute. The blister suppurated freely three or four days. The appetite returned and milk appeared in the breasts on the fifty-sixth hour after the first bleeding. The woman recovered. In the same journal Dr. J. N. Broocks reported a case of puerperal peritonitis treated by venesection and leeches.

Dr. Mettauer was seemingly proud of his *prophylactic* treatment of puerperal fever, for he wrote a number of articles on it. It consisted of: 1. Purgation a few hours after delivery. Some diuretic, such as an infusion of pine tops, was also considered useful. The diet, of course, was restricted. 2. Purging more remotely after delivery. 3. Purging in all cases after delivery. This treatment, however, was not universally accepted. We find Dr. Goodridge A. Wilson questioning the value of purgation.

As to the cause of the disease, Dr. Mettauer enumerated: Solid food of stimulating qualities, alcoholic incitants, conversation and premature exercise of body or mind. In cities and other places favorable to the generation of "idio-miasm," contagion may, and doubtless does, play a part, but in Prince Edward county there had been only a single case that could be traced to contagion as a cause.

An epidemic of puerperal fever that occurred in Mount Solon and vicinity was reported by Dr. C. R. Harris in 1852. More than three-fourths of those delivered were attacked. Of the thirty-six cases, seven died. There was one autopsy. The author, nevertheless, did not believe in the contagiousness of the disease.

In 1885 the germ theory, as it was called, had come to the front. Dr. I. S. Stone reported excellent results in treating a case of puerperal septicemia with intra-uterine injections of bichloride of mercury solution 1-500. In the same Journal, M. A. Rust had an excellent article on the evolution of antiseptic midwifery. He quoted from the Prussian statistics to show that three-fourths of maternal deaths were due to sepsis, or one in forty confinements. He advised against intra-uterine injections, and called attention to fatal cases of bichloride poisoning from intra-uterine injections. He condemned the routine exploration of the uterine cavity with the hand. He recommended bichloride compresses to the vulva to prevent air from entering the womb. Dr. Walter Izard described a safe method of injecting the uterine cavity, using potassium permanganate solution and a two-way nozzle.

Quite a modern touch to the subject of treatment of puerperal fever is added by Dr. Gideon Smith. Dr. Smith lived in Baltimore and his article does not rightly belong here, but I cannot refrain from mentioning it. He reported spectacular results from the administration of brewer's yeast. Distiller's yeast and household yeast would not do, and the brewer's yeast must be fresh.

The usual way of controlling serious postpartum hemorrhage was to massage the uterus with one hand within the womb and one on the abdomen. In some sections of the State it is still the practice to pack the vagina with a roller bandage soaked in turpentine. In the VIRGINIA MEDICAL MONTHLY there is an account of Hyatt's (Kinston, N. C.) method of controlling postpartum hemorrhage with a rubber bag filled with cold water, and in the same volume a correspondent writes that Diday used the same method in 1850. "In hemorrhage in abortion astringents are of no avail." The uterine cavity must be cleaned out with the finger or else tam-

XUM

poned. Dr. Harvey Black described the character of pulse that is premonitory to postpartum hemorrhage ("frequent and fretful").

ECTOPIC PREGNANCY

In 1791 and 1799 Dr. William Baynham operated successfully for extra-uterine pregnancy. The first patient consulted him three or four years after a missed labor. She was then in excellent health. He made the diagnosis of extra-uterine conception and advised the patient that she would have to wait the return of a second labor—"that at some future day nature, become weary of her burthen, would in some way or other manifest a disposition to rid herself of it." Three and a half years later she was seized with influenza which was then epidemic. The abdominal tumor became painful and continued to be a little troublesome to her until April, 1790. The tumor was then pointing towards the left side, where the integuments were inflamed. He attempted to open the tumor but after making an incision two or three inches he desisted, having neither books to consult nor medical friends to advise with. By January, 1791, it was evident that something must be done to save the woman's life. He determined at all hazards to extract the child. This time he continued the incision deeper and was successful in extracting the fetus in parts. It lay in a separate sac that apparently did not communicate with the peritoneal cavity and was lined with a thin incrustation of osseous or calcareous matter. The second case was similar but of only eighteen months' duration. This time he did not delay the operation but made an incision over the most prominent part of the tumor, thereby exposing the head of the child. Guided by his finger within the cavity he extended the incision cautiously up and down until it was large enough for him to remove the child. It was of the common size, and sound except on the head where a small part of the scalp was in an incipient state of putrefaction. There was no fluid in the cavity. He did not attempt to remove the placenta. Some pieces were thrown off at almost every dressing, but it was upwards of a fortnight before the string came away. Dr. Baynham thought that such cases were not uncommon and went unrecognized. Tragic ruptured ectopics were certainly unrecognized or else did not occur. I cannot find the report of a single case. There was quite an interesting lot of reports of abdominal pregnancies. Dr. John A. Cunningham reported the case of an old Negro cook who carried a fetus forty years. It was finally discharged through the rectum. Dr. H. G. Leigh reported a case of four years' standing. The patient died of heart disease and at autopsy fetal bones were found in a sac formed by the omentum. Dr. Geo. Wm. Semple reported a case in which the diagnosis of metritis was made. The patient passed a uterine cast and was treated for worms (which she had). The extra-uterine fetation was diagnosed at autopsy. Dr. Hunter McGuire reported a case of missed labor—subsequent pregnancy. The previous tumor then suppurated and fetal bones were discharged per vaginam. He opened the abdomen and removed what was left of a nine months' fetus. The patient died in a week. Dr. John Lewis removed the remains of a fetus per annum. Dr. Walter Izard successfully operated upon a case of abdominal pregnancy of four years' duration. There was a fistula at the umbilicus. Dr. J. R. Godwin had a case with fecal fistula at the navel and another fistula two inches below and to the left, through which he removed the fetal bones. The patient recovered. Dr. Samuel P. Brown also removed a decomposed fetus from the rectum. Dr. R. H. Tatum reported a retained fetus.

ECLAMPSIA

The treatment of eclampsia did not change as quickly and as much as it does today. In 1851 Dr. Pollard reported three cases with one recovery. His treatment consisted of cold to the head, blisters to the nucha, blood letting, cupping, enemata and purgatives. "On the use of opium there is some contrariety of opinion." He made the suggestion that chloroform might be used. If the convulsions do not stop, the uterus should be emptied. Veratrum viride made its appearance about 1874, and shortly afterwards chloral hydrate. In 1882 accouchement forcé was first mentioned, Dr. Charles R. Cullen reporting a fatal case. He regretted that he had no instrument with which to dilate the cervix more rapidly.

DYSTOCIA

Dystocia was most frequently due to malpositions. A surprising number of twins with locked heads were reported and several cases of uterine tumors. The cervix gave the Virginia doctors a lot of trouble. The rigid cervix was treated either medically

or surgically. Cupping over the lower spine was at one time the favored remedy. Later this was supplanted by chloral hydrate. For a while gelsemium had many users. In 1851 Dr. Reynale reported a case in which neither he nor his consultants could find any opening in the cervix. He made an incision two inches long in the cervix and labor continued to a successful conclusion. The outstanding work in this field was done by Dr. Wm. A. Patteson. In 1854 he performed what we now call Dührssen's incision. This was before Dührssen was born, and Dr. Patteson called his operation vaginal hysterotomy. Later he reported two other cases. Dr. William J. Harrison reported a case that was bled twice and in which nauseants were fully tried. He finally resorted to Dr. Patteson's operation. Dr. William K. Gatewood also reported a case of this operation.

The perineum did not cause great concern. Certainly very little was written about it. Dr. Hunter McGuire discussed supporting the perineum during labor. He considered it useless and fraught with danger. In 1852, Dr. R. M. Taliaferro reported a case of rigidity of the soft parts in which delivery was effected after he had made a medio-lateral incision in the perineum. The word episiotomy was first used five years later (*Am. J. Obst.*, 11:517, 1878). Dr. Taliaferro laid no claim to originality but said that a similar case had been reported "in the last July number of the *London Lancet*."

OXYTOCICS

Oxytocics were popular, judging from the number of articles published. Four were upon the preparation of ergot. It is interesting to note, in view of the recent work on ergot, that the majority of the preparations contained the watery extract. Nevertheless, the clinical reports were not always laudatory. Dr. Parker said that it failed to work in eight out of ten cases, although Dr. Wellford and others disagreed with him. The use of ergot was widespread. It was given by mouth usually, but when the patient was nauseated the powder was dusted on a blistered surface. In a series of seventeen primiparous labors reported by McSherry ergot was used in four. In each there was a stillbirth. He lost ten babies, not counting a hydrocephalic, in the seventeen deliveries.

Dr. Robert C. Coleman found quinine to be a weaker oxytocic than ergot and therefore was to be preferred in the first stage of labor. Dr. Skelton was of the same opinion. Dr. Grammer, of Halifax, preferred the tincture of mistletoe to ergot. He later reported a case of ruptured uterus in labor.

FORCEPS

The forceps played only a small part in Virginia medical literature. In 1856 there is a comment on Dr. Chatard's use of the forceps. Dr. Peter Chatard, of Maryland, in 4309 obstetrical cases used the forceps once in thirty deliveries. Commenting upon his book of practice after thirty years, Dr. Chatard said, "As to the application of the forceps they are evidently very numerous. The use of this instrument might have been reduced three-fourths but feeling certain of not injuring the children, and desirous of abridging the suffering of the mothers, I did not hesitate to make use of it." A. M. Fauntleroy's article also has a very modern ring. He quoted statistics from the Rotunda Hospital and from Dr. Hamilton to show that as the incidence of forceps operation increased and the duration of labor decreased there was a proportionate lowering of fetal and maternal mortality. The subject was also discussed by Dr. E. M. Campbell and Dr. Thomas J. Moore.

RETAINED PLACENTA

Retained placenta was reported seven times, six times after full-term labors and once after an abortion. According to Dr. L. Faulkner, if the placenta cannot be delivered you had better leave it to nature. "It is better to ground arms in proper time, and see that nature has a fair chance." Dr. George S. Minor evidently did not give nature a fair chance, for his patient died on the 13th day of "irritative fever." Dr. P. W. Harper had better luck; he saw his patient twelve hours after delivery. There was an hour glass contraction of the uterus and neither he nor his consultant could deliver the placenta. On the second day the patient began to run a fever and on the fourth began to expel portions of the placenta. On the tenth day the last portion of the placenta was expelled. On the twenty-first day the patient was free from fever. On the twenty-third day she developed a phlebitis in the right thigh and leg which yielded in six days to purging, bleeding and external applications of saturnine solution. The swelling and concomitant symptoms then visited

XUM

the left thigh and leg, but yielded to the same plan of treatment.

RUPTURED UTERUS

Between 1859 and 1880 five cases of ruptured uterus were reported and one case of ruptured vagina with the escape of the fetus into the peritoneal cavity. In one case it was stated that ergot had not been used. Dr. Preston described a new sign, one that was first described by M. Jolly, a sub-peritoneal swelling that appeared either above the pubes, in the groin or in the vagina. Dr. Fontaine's description of his case shows us what a country doctor had to contend with. He found the patient in extremis. There was no time for consultation, very little for consideration. With the willing assistance of two women he did a craniotomy and finally extracted the child. He then "went after" the placenta and found that partly in the abdominal cavity. He delivered it manually. He then found a recto-vaginal fistula. He locked up the bowels for a week with opium. The patient recovered and the fistula healed.

In conclusion, it is evident that Virginia doctors kept abreast of the times in practical obstetrics. At times they were in advance of their time. This is especially true in Cesarean section, episiotomy, and multiple incisions of the cervix.

ORTHOPEDIC TREATMENT OF INFANTILE PARALYSIS.*

ALLEN SOUTHALL LLOYD, M. D.,
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The orthopedic treatment of infantile paralysis should begin when the diagnosis is made. The disease may be divided into three stages from an orthopedic viewpoint: the acute stage, the subacute and chronic. More can be accomplished by proper orthopedic treatment during the first weeks of the acute stage to prevent and minimize deformities and disabilities than can be done in months or years if orthopedic treatment is deferred until the chronic stage.

In an infantile paralysis epidemic in New York, I have seen apparently completely paralyzed children with nothing but the ability to breathe and swallow (that is, with paralysis of all the extremities, the back and the abdomen, which does not refer to the bulbar form of the disease), and several of the children regained a remarkable degree of function of the paralyzed muscles, simply through having the body and extremities supported by plaster so as to remove all strain from the paralyzed muscles. At the end of a year there was not a single case that was treated in one clinic that showed even nearly the extensive paralysis that was present in a number of the older cases from previous epidemics. This does not indicate that the older cases had developed more paralysis as time went on, for, as we all know, with proper treatment the disability due to infantile paralysis decreases rather than increases with time. One of two conclusions can be drawn from this state of affairs: either the previous epidemic had been more severe, or else the patients in the previous epidemic had not had as efficient care during the early stages as those during the epidemic of 1931. I am led to believe that the latter explanation is the true one, since the histories of a number of the older cases showed that they had not, at any time, had as extensive involvement as some of our more recent patients, who actually had less disability at the time of comparison. A number of children from the previous epidemics who had complete paralysis of one or more muscle groups in the legs, for instance, stated very definitely that there had never been any involvement except of those particular muscle groups, and in not a few cases the involvement had first appeared as a weakness and not as a paralysis. How can one reconcile this with the previous statement that the paralysis gets better and not worse? How could they have had weakness at first and paralysis later? The answer is that with proper support the muscle power increased with time, and without that support the normal muscles continually stretch the weakened muscles. For example, the normal hamstrings stretch the weakened quadriceps by keeping the knee in a flexed position, thus causing further weakening of the quadriceps until, if the muscle is

*Read before the Norfolk County Medical Society March, 1936.

already pretty weak to begin with, it can lose so much of its function that with time it is virtually functionless.

During the acute stage absolute rest is essential, not only for the child as a whole, but also for the individual weakened muscle groups. The weakened or paralyzed muscles cannot be at rest under the most favorable circumstances if they are constantly being subjected to the stretching actions of opposing normal muscles.

As soon as the diagnosis is made, boards should be placed between the springs and mattress so that no sagging of the mattress occurs. A small flat pillow should be placed beneath the lumbar spine to maintain the normal lumbar lordosis. The patient should lie on blankets, not sheets, and should be covered by a heat cradle containing one or two bulbs. The extremities should be kept in neutral position before any particular weakness or paralysis occurs. Neutral position for the hips is 15 degrees flexion; 15 degrees abduction; neutral rotation; for the shoulder, 45 degrees abduction; neutral rotation; for the elbow, 45 degrees flexion; wrist, 15 degrees dorsi flexion; forearm, 45 degrees supination; knee, 10 degrees flexion; foot, about 10 degrees equinus and slight supination. These positions are maintained by pillows and sand bags during the febrile stage. If weakness or paralysis of any muscle group occurs during the febrile stage, provision is made for it by altering the position as indicated and continuing the use of the pillows and sand bags. The patient should lie straight in bed to avoid the probability of scoliosis.

No other orthopedic treatment except general supportive treatment is used during the acute stage. Massage, electrical stimulation and exercise are absolutely contra-indicated.

As soon as the fever leaves, and regardless of the muscle tenderness, plaster or other splints are applied in such positions as will allow the paralyzed muscle groups to relax. Sometimes the whole patient is immobilized in a plaster shell from head to toes.

All parts of the patient that are not covered by casts are protected with warm woolen clothing—when metal splints are used in the place of casts, the splints are applied over the woolen underwear. Where it is possible, warm salt baths in a pool or a large tub at temperature of 92 to 94 degrees are used, but the baths must be given by trained personnel, for weakened muscles can be damaged easily by injudicious handling. Sometimes the entire patient is fastened to a large board and lowered into the water where gentle active and passive movements are performed.

Where the baths are not available one can use a powdered board which overcomes the effect of gravity. The whole patient is warmed under a cradle before the exercise is given, and the work should be done in a very warm room.

Splints should be worn at all times while the patient is in bed, and when he gets up he should be properly braced in the daytime and have night splints for wear at night.

The methods of testing for weakened or paralyzed muscles are, first, observation, and, second, pricking with pins. The volume of cases in any epidemic is too great to allow testing muscle groups by means of electric current, although in the individual case this method can be used to advantage later on in order to get a more definite idea as to the progress.

During the subacute stage, which, for convenience, can be said to begin about three months after the onset of the disease, physiotherapy is indicated. This takes many forms and the vigor with which the various procedures are carried out depends on the progress of the individual case as is evidenced by increasing or decreasing strength in the involved muscle groups. Certain procedures which are used in the later part of the acute stage are continued during the subacute stage. Assisted active exercises either on a powdered board or under water; gentle sinusoidal stimulation and massage; and gentle passive motion painlessly performed are the most valuable of the measures.

The chronic stage can be said to begin when further improvement is not obtained by physiotherapy. Although one cannot expect much improvement after two and one-half years have elapsed since the onset of the disease, there are individual cases which continue to show definite improvement, and, as long as this is the case, physiotherapeutic measures should be continued.

In general, one can say that the chronic stage, or the stage of residual paralysis, begins about two and one-half years after the onset of the disease. It is during this stage that one must consider surgical

XUM

procedures designed to overcome the disabilities occasioned by the paralysis. If the patient has received the proper treatment there will be no deformities except shortening or reduction in circumference of an extremity. Unfortunately, we are unable at present to offer much in the way of attack on the loss in circumference of an extremity. For the shortening of an extremity we have four possible procedures. In the growing child we can use the Ferguson operation which speeds up the growth of the shortened extremity, or the Phemister operation which stops the growth of the good extremity. After growth has ceased, we can do either a bone lengthening, such as an Abbot operation, or one of its modifications, or we can shorten the good extremity. In joints that are completely flail we can perform fusions. In certain instances, we can transplant good muscles to take the place of paralyzed ones or we can combine these two procedures. For instance, if the dorsal flexors of the foot are very weak, we can give the tibialis anticus and the peroneals added mechanical advantage by transplanting them to the dorsum of the foot and at the same time do a fusion of the talo-calcaneo-astragaloscaphoid and calcaneo-cuboid joints. Bisgard has reported an operation where he transplants a portion of the gluteus maximus to take the place of the paralyzed gluteus medius and operations have been devised to transplant the sacro-spinalis to take the place of the paralyzed gluteus maximus. Steindler does a transplant of the flexors of the fingers to enable them to flex the elbow as well as the fingers, converting an apparently useless extremity into a very useful one. In cases where, due to inadequate orthopedic treatment, deformities have occurred, they can be corrected by teno-plasties, capsulotomies or osteotomies. In cases where the muscles of the back are paralyzed, one has the choice between braces or operative fusion of the spine.

This is simply an outline of the orthopedic approach to the problem of infantile paralysis, but it is hoped that the features of interest to the members of this Society have been covered as well as can be in the time available.

Wainwright Building.

THE HOSPITAL AND THE ORGANIZED MEDICAL PROFESSION.*

HOMER F. SANGER
Council on Medical Education and Hospitals, American Medical Association, Chicago, Ill.

To one whose ancestors were all Virginians and who regards himself more as a Virginian than anything else; whose father was born in Rockingham County and mother in Botetourt County, being here is a great personal privilege. It is getting back home.

But we have been asked to consider together the ties that bind us as medical people and as hospital people into the one great united effort to make funerals come farther apart. Your own convention is the best example of that unity, cooperation and mutuality by which we all strive toward a common goal. In the formation of a national federacy of all medical organizations eighty-nine years ago, Virginia and Carolina were to be found right in the front rank. There were then in the United States over eighty recognized medical societies—all good but each working separately. Without a central head through which to express themselves, they were like eighty blind men all trying to thread the same needle, in the dark.

Among the societies represented were Medical Society of Virginia, Medical Convention of Virginia, Petersburg Medical Faculty, Medical Society of Fredericksburg, Loudoun County Medical Society, Norfolk Medical Society, University of Virginia, Ohio County Medical Society, Winchester Medical College; Medical Society of South Carolina, Medical College of the State of South Carolina.

The roll call of doctors in attendance from those states included such names as Haxall, Patteson, Mills, Marx, Conway, Cullen, Wellford, McGuire, Cabell, Peebles, Houston, Massie, Selden, Corbin, Trigg, Broocks, Johnson, Carmichael, Magill, Upshur, Howard, Bates, McIlhenny, Randolph, James Moultrie, Jervey, Elfe, Gaillard and Barker.

*Read before the Tri-State Hospital Association at Old Point Comfort, Va., April 16, 1936.

Looking back to 1847 at the convention of 268 doctor delegates from those eighty organizations our imaginations give us a picture of quaint dress, oratory, horses and buggies; but great earnestness of purpose. Wonder what they talked about? Well, as a matter of fact, we have the full proceedings, including copies of the speeches and papers. The subject of anesthesia was discussed at length. "Professor Moultrie, of South Carolina," so the record goes, "reports the use of chloroform in one instance." He goes on to say, "This was in a case of twins, the second child requiring manual assistance, in a patient who resisted with brute ignorance every effort to afford her aid, even the administration of chloroform. The result has been quite happy. The presentation was the forehead and the foot. During the period of insensibility, and after repeated failures before, the foot was restored and the head assuming the rightful position, the labour eventuated naturally."

Other subjects for equally earnest discussion were tuberculosis, rheumatism, cancer, neuritis, pneumonia, contagious and infectious diseases, typhoid and laryngitis.

But they were mainly concerned about how to meet great issues of national scope. A committee reported a complete code of medical and hospital ethics. Another committee reported a list of causes of death which was suggested as a start toward a nomenclature of diseases.

This statement from the proceedings of the Convention has a familiar ring:

"The very large number of physicians in the United States, a number far larger in proportion to its population than in any other country perhaps of which we have a correct knowledge, has frequently been the subject of remark. To relieve the diseases of something more than twenty millions of people, we have an army of doctors amounting by a recent computation to forty thousand, which allows one to about every five hundred inhabitants. And if we add to the 40,000 the long list of irregular practitioners who swarm like locusts in every part of the country, the proportion of patients will be still further reduced. No wonder, then, that the profession of medicine has measurably ceased to occupy the elevated position which once it did; no wonder that the merest pittance in the way of remuneration is scantily doled out even to the most industrious in our ranks,—and no wonder that the intention, at one time correct and honest, will occasionally succumb to the cravings of a hard necessity. The evil must be corrected." *Proceedings of the National Medical Convention,* Philadelphia, May, 1847, pp. 70 and 71.

Another great subject was the care of the indigent. They also talked about maternity welfare and they directed a survey in that field. There is quite an interesting discussion of the tendency of physicians to go to the towns and cities, and there was concern, also, lest there should be too few doctors in the country.

The convention of 1848 (Baltimore) also united in a formal protest to the United States Government against the importation of worthless and harmful drugs, a flood of which was being foisted upon this country, there being no central organization to investigate these drugs and to expose their viciousness and to educate the people against them.

Also, a delegation was sent to bear good will to the British Medical Association which, by the way, was a similar federation of medical organizations and which was then just fifteen years old. It was customary at those conventions to adjourn discussions for ten minutes in order that each of the delegates might contribute three or five dollars which he was assessed, to defray the expense of the convention.

The committee which, according to all records, represented the most urgent concern of all, and which was itself the object of their uniting in a federacy was the Committee on Medical Education —the forerunner of the Council on Medical Education and Hospitals—and, by the way, three members of this committee were Drs. Haxall and Cullen, of Richmond, and Dr. S. A. Patteson, of Manchester, Virginia. In the report of the Committee, read by Dr. Wellford, of Fredericksburg, Va., the first three resolutions had to do with hospitals:

1. Resolved, That this Association considers defective and erroneous every system of medical instruction which does not rest on the basis of practical demonstration and clinical teaching; and that it is, therefore, the duty of the medical schools to resort to every honourable means to obtain access for their students to the wards of a well-regulated hospital.

2. Resolved, Therefore, that this Association earnestly and respectfully appeals to the trustees of hospitals to open their wards for the purpose of clinical

XUM

instruction, satisfied that they will thereby more efficiently aid the cause of humanity, and more perfectly accomplish the benevolent intentions of the founders of the charity.

3. Resolved, That the practice of appointing physicians and surgeons to the charge of a hospital on political or other grounds than those of professional and moral worth, is inconsistent with the welfare of its inmates and, of consequence, inhumane and unjust, subversive of the objects of its founders, and incompatible with a conscientious appreciation of the high responsibilities devolved on the appointing power.

The then new American Medical Association was to correlate all the constituent medical societies in solving their common problems. It became a central clearing house also necessary because all states had different laws.

In 1873 the Proceedings of the Association published the results of a survey of hospitals including a list of those existing then. In the same year, the Judicial Council to deal with questions of ethics was organized.

As rapidly as required, certain of the committees were changed into permanent councils with offices at the headquarters and with equipment and funds and personnel with which to carry on.

The Journal, established in 1883, has been printed every week since, and on the Association's own presses for forty-two years. The nine special journals were established between 1909 and 1929.

One thing the nation and the profession had to have was a central, authentic record of every person qualified to practice medicine. The Association's answer was the American Medical Directory, the first issue of which was published in 1906.

The Committee on Medical Education became the Council on Medical Education in 1904 and at once began its work for medical schools, resulting in the elevation to standards equal to the best found in any civilized country.

The Council on Pharmacy and Chemistry was organized in 1905; it investigates and reports on products offered for sale to physicians and hospitals.

In rapid succession and in response to needs came the Bureau of Investigation for the exposure of frauds and quackery, the Council on Health and Public Instruction, and the Library which now prepares the Quarterly Cumulative Index Medicus, an index to all significant medical literature in every language. Next came the Bureau of Legal Medicine and Legislation through which physicians and hospitals are kept informed of proposed legislation. *Hygeia* was launched in 1923. Two years later was established the Council on Physical Therapy to deal with methods and appliances in physical therapy. The Bureau of Exhibits was established in 1930 and the Bureau of Medical Economics in 1931.

The services which are demanded of the office at the headquarters require a force of 500 employees, twenty-three printing presses, and forty-three telephones. Two million, two hundred and one thousand letters were sent out last year—an increase of 160,000 over the previous year.

Space permits the mention of only a few of the things that the Council on Medical Education and Hospitals has done for hospitals.

The list of hospitals approved for intern training has been helping hospitals and interns to find each other for twenty-two years. Proper hospitals for residencies in specialties have been pointed out for ten years. For twelve years the Council has been designating competent clinical pathologists, and the incompetent are restrained. The radiologists followed with a request for the same type of standardization and the list of radiologists was prepared. More recently the House of Delegates has asked the Council to pass upon the standards of the Boards of Examiners in all medical specialties, after the boards have been coached by the advisory committee, so that the examination and certification for all specialties might be done efficiently, thoroughly, and uniformly, and so that the persons who wish to find a specialist in the future will turn to the American Medical Directory or any other publication containing the official list. Hospitals will also look forward to receiving very soon from the Council a list of accredited schools for laboratory technicians, prepared in cooperation with the American Society of Clinical Pathologists; schools for occupational therapists, in cooperation with the American Occupational Therapy Association, and of schools of physical therapy in cooperation with the Council on Physical Therapy and other recognized agencies.

INQUIRIES

The office always has answered courteously every inquiry whether by letter, telegram, telephone, or personal interview; giving the information secured by the Council's original surveys or referring the

inquirer to other reliable sources for information or assistance. An information service has been developed which answers an average of over 5,000 hospital inquiries a year—inquiries about the standing of hospitals, physicians and institutions; relation of the hospital to the radiologist; pathologist; anesthetist; relation of the staff to the board of trustees.

Letters requesting hospital statistics; help us fight irregulars and cultists! Requesting courses in dietetics, laboratory or X-ray technic; asking how to organize a staff, conduct a conference, build a hospital, obtain interns, start a medical library.

The types of service given by the American Hospital Association, the College of Surgeons, and the Council on Medical Education and Hospitals are mutually supplementary. Our three offices freely refer inquiries to where they belong, and we accommodate each other.

THE HOSPITAL REGISTER

The Hospital Register is a successor to the list of hospitals always included in the American Medical Directory. It is a source book of information, authoritative and fairly complete. The latest census of hospitals obtained returns from 96 per cent of hospitals by number and 99 per cent by capacity.

The Register gives about twenty facts concerning each of the hospitals listed. By furnishing reliable information regularly to practically all physicians, all hospitals, all the principal departments of the national and state governments, American and foreign diplomatic representatives, the public and private libraries of this country, publicity is given to those hospitals that are considered worthy. The Register prevents hundreds of partial surveys and questionnaires by anticipating the most of the information desired in such inquiries. It has also served to limit over-building and ruinous competition.

The Council works directly under the House of Delegates of the American Medical Association and is responsible directly to that body. On the Council are men of good judgment and experience, interested in the welfare of hospitals and the medical profession. They serve long terms; they are reasonably well supplied with funds. The Association allots the Council a budget of $60,000 to $80,000 a year, some $40,000 of which is spent in the interest of hospitals.

The Council's work for hospitals is also greatly strengthened by its organic relationship to the fifty-three state medical societies, 2,061 constituent county medical societies, and 101,754 members of the American Medical Association, of whom 62,997 are fellows.

Among other factors of distinctive advantage to the Council are the publications of the Asssociation which afford the Council channels through which to speak. The American Medical Directory and *The Journal,* by publishing names of recognized hospitals for twenty-seven years, have contributed 300,000 free advertisements to the hospitals of the United States. This publicity is of the most valuable kind because it is censored, unbought and unprejudiced. It separates the sheep from the goats among hospitals. It encourages the good ones and it restrains the others even to the extent of shaming many of them out of existence. Physicians have always used these lists in referring their patients who move to other parts of the country for milder climate or for other reasons. The list is used by public officials throughout the country who have the assignment of patients and as a guide in securing for hospitals relief from taxation.

THE INSPECTION SERVICE

The Council's service for hospitals has been greatly helped by its staff of inspectors which, while only three in number, has been sufficient to visit around 1,500 hospitals with respect to internship, about 500 concerning residencies, 631 mental hospitals, around 500 tuberculosis hospitals, and about 500 small hospitals and related institutions. These men are specially qualified young physicians who came to the service of the Council with such medical preparation and at such age that their proficiency increases with their years of experience.

The Council can desire nothing more than a continuation of that confidence and cooperation which has been extended to it by the entire hospital field, including the individual administrators, medical students, interns and staff members. The office of the Council acknowledges its pleasure in the splendid help of a large number of organizations, and especially the fine cooperation of the American College of Surgeons, the American Hospital Association, and the closely allied Catholic and Protestant Hospital Associations.

XUM

Of supreme importance with regard to hospitals has been the fine, faithful response of hospitals themselves, their staffs and other officials.

Organized medicine and hospitals, either witho the other, would be like Hamlet with Hamlet le out.

ACUTE ABDOMINAL EMERGENCIES.—SOME DIAGNOSTIC AND THERAPEUTIC CONSIDERATIONS.*

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Anyone attempting to bring this subject yet again to the attention of any medical group such as this might seem guilty of a certain bravado, if not of actual presumption were it not for the fact that acute abdominal emergencies constitute such a major problem in the practice of medicine, and that the mortality and morbidity rate from them remains disturbingly high. This, alone, constitutes an excuse for reopening this oft-discussed, perhaps, threadbare, subject.

If, in this discussion we appear to ignore many of the time-honored and thoroughly established methods of diagnosis and management used in acute abdominal emergencies it is because the limitations of this paper do not permit of anything like an exhaustive treatment of this subject, and it is our purpose to emphasize those methods of diagnosis which we see less frequently used, and to point out some changing concepts of the management of these cases.

One of the greatest difficulties we face in meeting acute abdominal emergencies is to obtain in the all too brief interval allowed by the very character of the emergency sufficient factual data to establish an accurate diagnosis, and thus determine the type of treatment demanded by the case before us.

To expedite the cataloguing of essential data as gleaned from the oftentimes hysterical verbosity of himself and his family we have adopted the following scheme which we have found useful as a general guide.[1]

Patient's Name_____ Sex____ Age___
Address _____
Date and time of examination_____

HISTORY OF PRESENT CONDITION

Exact time of onset:
Pain. (a) Situation at first
(b) Character
(c) Pain on micturition
Mode of onset.—Acute or gradual
(d) Has it shifted?
(e) Any radiation?
(f) Affected by deep inspiration.
Vomiting. Before—at same time—or some hours after pain.
How often?
Character of vomiting.
Type of vomiting.
Nausea.
Bowels: Regular usually?
Diarrhoea?
When last open.
Any blood in motions.
Menstruation. Exact date of last period.
Whether last period + or —.
Painful or not.
Exposure to bite of any insect.

PAST HISTORY

Any serious previous illness? Any dyspnea or precordial oppression?
Indigestion. If so, how long after meals before pain comes?
Jaundice. Melena. Hematemesis.
Hematuria. Loss of weight.
Confinements (if any).
Any history of hypertension or renal disease?

PRESENT CONDITION

Pulse. Blood-pressure. Res. Temp.
General Appearance. *Facial expression.*
Abdomen: Pain. Tenderness. Cutaneous. Rigidity Distension. Hyperesthesia.
Movement on respiration.
Free fluid.
Thigh-rotation test.
Tumor or external hernia.
Liver dullness.
Rectal Examination.
Chest Examination.
Spine. *Knee-jerks.* *Pupils.*
Urine. *Blood.* *Pus.* *Albumin.* *Sugar.*
Vaginal Discharge.
Bimanual Examination.

When we consider the age incidence of the various conditions giving rise to an "acute abdomen" we receive immediate help. Acute intussusception occurs generally in infants under two years of age. Obstruction of the large bowel by a cancerous growth or stricture is rarely seen before thirty or forty, but

*Read before the Southwestern Virginia Medical Society, at Galax, Va., April 2-3, 1936.

1. The Early Diagnosis of the Acute Abdomen, Cope, Zachary. Oxford University Press. (Fifth Edition.) 1928.

is the commonest cause of intestinal obstruction in persons over forty years of age. Acute pancreatitis is almost never seen in those who have not reached middle age. Perforated gastric ulcer is a great rarity under the 'teen age group. Of course, the acute pelvic infections and derangements of the developing ovum occur only in those women between the limits of the child-bearing period. Acute appendicitis, acute cholecystitis and torsion of an ovarian cyst may be encountered in children and adults, but is more frequent in the latter.

Patients suffering from any one of the more severe acute abdominal emergencies can usually fix the exact time of onset. The sudden agonizing pain of a perforated gastric ulcer or an acute pancreatitis —frequently waking the sufferer out of a sound sleep—admits of little question as to the exact time and mode of onset. And the same thing is true to a greater or lesser degree of such other conditions as acute appendicitis or cholecystitis, or biliary or renal colic.

It is important to determine whether the condition began immediately or shortly after some injury, since too often apparently trivial injuries are followed by serious lesions.[2]

Finally, the old question as to whether a mild "stomach-ache" was suddenly turned into a violent colic after the enthusiastic though ill-advised administration of a cathartic is one which must always receive an answer.

The acuteness of onset usually is in direct relationship to the severity of the lesion. Of course, one must here take into consideration the personality and psychic condition of the patient and wisely minimize the hysterical ravings of some, while at the same time being not deceived by the Spartan calm of others. The only two conditions (with the exception of severe injuries) which are likely to cause fainting in a man are (1) perforation of a gastric or duodenal ulcer; and (2) acute pancreatitis. To these may be added the rupture of an ectopic gestation in a woman.

Although many cases of intestinal obstruction are gradual in onset, culminating in an acute crisis, strangulation of the gut is accompanied by very acute symptoms from the first. The sudden onset of severe symptoms accompanied by more or less evidence of shock seen in torsion of the pedicle of an ovarian cyst or large uterine fibroid is too familiar to warrant description here.

Exact knowledge as to time of onset enables us to more accurately estimate the probable pathological changes that have occurred and to make not only a more exact diagnosis, but to provide a more reasonable prognosis. And this point is now of especial importance since the publication of Stanton's statistics regarding results from operation at various stages of appendicitis.[3] He and Reschke[4] presents statistics of American and German clinics, respectively, which prove that the present high mortality rate in acute appendicitis is due to too great a number of operations being performed between the third and the ninth days of the disease, and state that the great improvement in the number of early operations has been so offset by the high mortality of operation in the intermediate period that there has been only a barely perceptible improvement in the average hospital appendicitis mortality statistics. By elimination, what they term the "intermediate operation" (i. e., between the third and ninth days) the total mortality rate in 500 cases of appendicitis operated upon has been reduced to 2.16 per cent. Such knowledge is also essential in order to determine whether the apparent well-being of the patient corresponds to the stage of reaction which is seen in some conditions. It may save us from the fatal mistake of minimizing the gravity of the condition when we see, for instance, the comparatively comfortable patient whose appendix has already perforated.

The greatest importance attaches to the very careful consideration of the onset, distribution, and character of the pain.

Original Situation of the Pain.—When the peritoneal cavity is flooded suddenly by, say, blood from a ruptured ectopic gestation sac, or pus from a ruptured pyosalpinx, or irritating fluid from a perforated gastric ulcer, the pain may be "felt all over the abdomen" from the beginning. But the maximum intensity of the pain is likely to be felt at the onset in the region of the pathologic condition. In perforated duodenal ulcer, pain may be at first more acute in the right hypochondrium and right lumbar and iliac regions, owing to the irritating

2. Traumatic Surgery of the Abdomen. Burnett, W. Emory. The Cyclopedia of Medicine. Vol. I, pp. 17-28. F. A. Davis Co. Philadelphia (1935).

3. Acute Appendicitis. Stanton, E. MacD. *Surg., Gynec. and Obst.*, 59:738-744 (November), 1934.

4. The Treatment of Appendiceal Peritonitis in the Intermediary and Late Stage. Reschke, Karl. *Beitr. z. klin. Chir.*, 161:64-70 (January), 1935.

XUM

fluid passing down chiefly on the right side of the abdomen.

Pain arising from small intestines is always felt first and chiefly in the epigastric and umbilical areas of the abdomen, and since the appendicular nerves are derived from the same source as are those of the small intestines it is not surprising that the pain at the onset of an attack of appendicitis is usually felt in the same area.

The pain of large bowel affections is more commonly felt at first in the hypogastrium, or, when the meso-cecum or meso-colon is very short or absent, at the actual site of the lesion.

From the above remarks we can also appreciate the importance of determining the shifting or final localization of pain.

The character of the pain is hard to elicit from some patients, but is important. The excruciating agony of an acute pancreatitis; the sharp, constricting breath-taking pain of biliary colic; the generalized abdominal burning of a perforated gastric ulcer; the griping pain of intestinal obstruction, or the dull, fixed pain of a pyonephrosis each may be sufficiently distinctive in certain cases to tell the story of the illness.

Radiation of the pain is specially helpful in the colics, in which pain radiates to the area of distribution of the nerves coming from that segment of the spinal cord which supplies the affected part. Thus in renal colic the pain frequently radiates around and down into the testis or labium of the same side, whereas the pain of biliary colic is often referred to the region at the angle of the right scapula and to the right supraclavicular region.

Is the pain affected by respiration? Pleuritic pain is usually increased on deep inspiration and relieved by momentary cessation of respiration. Any intra-abdominal condition which irritates or makes unusual pressure against the diaphragm causes increased pain with respiration.

Special varieties of pain, e. g., that on micturition, are of importance. This particular one may be caused not only by the urinary conditions, pyelitis, urinary stone or acute hydronephrosis, but also by a pelvic abscess lying close to the bladder or by an inflamed appendix which irritates the right ureter, or even by impingement upon the bladder of a pelvic tumor.

Vomiting in acute abdominal lesions is almost always due to one or more of the three causes:

(1) Severe irritation of the nerves of the mesentery or peritoneum, e. g., following perforation of a gastric ulcer or gangrenous appendix, or following torsion of an ovarian cyst.

(2) Obstruction of an involuntary muscular tube.

(3) The action of toxins upon the medullary centres, e. g., cases of septic peritonitis, or in the toxemias of certain medical conditions which simulate the acute abdomen—uremia, diabetes, etc.

The relationship of the pain to the vomiting is highly important. In appendicitis pain almost always precedes the vomiting by three or four hours, whereas in sudden severe stimulation of the peritoneum or mesentery vomiting is early. It also occurs early and almost simultaneously with the pain in obstruction of any of the smooth muscle tubes.

The frequency of the vomiting usually varies directly as the acuteness of the condition. Here, we may observe that the overwhelming concern with which the average layman usually regards the symptoms of vomiting is abundantly justified.

Nausea and loss of appetite are sometimes encountered in people who do not vomit easily. If they are acute in character they should be regarded with the same distrust as vomiting.

In any history one will obviously inquire into the condition of the bowels. If we do not, the patient will usually tell us anyway.

Inquiry into the menstrual history is always demanded by the woman presenting herself with an acute abdominal emergency.

The determination of a possible insect bite is certainly of more than academic interest to that member of our society who suffered the acute abdominal pangs following the bite of a black widow spider. And, since cases of this nature have been subjected to laparotomy, it behooves us to be on our guard against adding surgical insult to an already dangeriously ill patient.

The value of the past history in abdominal cases, especially the importance of previous attacks of "indigestion," typhoid fever, peritonitis, appendicitis or pneumonia, of jaundice, hematemesis, hematuria, and other conditions need only be mentioned here.

The Physical Examination.—We shall not discuss the usual procedure in making the physical examination in such cases, but shall content ourselves with seeking to emphasize certain methods which have proven useful in our hands and which we do not see commonly employed.

I would especially emphasize the more careful and general use of simple inspection. Doubtless many of us will recall off-hand how frequently we have left the home of a patient who was suffering from some acute abdominal emergency without having in our minds any well-defined picture of the general appearance of that patient. We focused our attention so completely and immediately on the region between the thorax and the pelvis that we completely forgot to look at the individual. Or, perhaps, we have been chagrined to arrive at hospital with a patient for laparotomy who, when stripped for bed, immediately presents obvious signs of a condition outside the abdomen causing the symptoms. I have seen marked opisthotonos and an easily visible goitre completely over-looked because the patient was examined in a dimly-lighted room and the throat not bared. Laparotomy was contemplated where the condition proved to be a thyroid crisis.

Such gross errors seem fantastic but they happen with sufficient frequency to serve as warnings to us all. I must admit my own tendency to them.

Looking at the tongue seems to have become almost a lost art of medicine, and yet it might warn us of the imminence of one of the exanthematous diseases which, in children, are not infrequently apt to simulate one of the acute abdominal conditions. And certainly the very dry tongue of uremia, heavily covered with a brownish fur with sordes on the teeth ought to keep us from a diagnosis of intestinal obstruction which it so often simulates. Here it might be wise to pause long enough to emphasize that in cases of renal failure short of true uremia, there may be adynamic ileus, as pointed out by Wakefield and Mayo,[5] and it behooves us to get a blood chemistry determination as well as urinalysis in these older individuals in whom there is any reason to suspect renal damage.

The pinched features and dilated alae nasi with the accompanying rapid, shallow, labored respiration of the pneumonic patient should focus the attention on the chest rather than the abdomen. Especially in children are we to guard against interpreting the rigid abdomen as due to some local intra-abdominal condition without first determining whether it may not be caused by some irritation of the diaphragm.

5. Ileus Associated with Transient Renal Insufficiency, a True Entero-Renal Syndrome. Wakefield, E. G., *et al. J. A. M. A.*, 104:2235-2239. (June 22), 1935.

Simple inspection of the abdominal wall gives valuable information. In the case of a perforated gastric ulcer the abdominal wall hardly moves at all on respiration, while in appendicitis the hypogastric zone, especially on the right side, is held immobile. In acute pancreatitis the epigastric zone, and sometimes, also, the lower abdominal wall is motionless. Indeed, the patient is apt to be frozen into complete statuesque immobility of the entire body from the agonizing pain. Occasionally with biliary colic there is inhibition of the diaphragm so that the respiratory movement of the epigastric portion of the abdominal wall is diminished.

The Pulse.—Though examination of the pulse is a time-honored guide in the investigation of all medical and surgical conditions and, though it is emphasized in so many eminent writings, it has, for my part, proven too fickle and optimistic a friend to permit of much confidence in its guidance either in diagnosis or prognosis.

Temperature.—The temperature may be subnormal, normal, or raised, or all three may be recorded at different times in any case of acute abdominal disease. An oral temperature as low as 95 or 96 degrees F. is often recorded at the onset of an attack caused by acute pancreatitis, acute intestinal strangulation, perforated gastric ulcer, or severe intra-peritoneal hemorrhage.

In the beginning of an acute attack of appendicitis the temperature is usually normal, but within a few hours it generally rises steadily to about 100 or 101 degrees F. The temperature is more apt to fail to rise with the progress of the pathologic process in already seriously debilitated patients than in those who were previously well. When perforation occurs, the temperature usually goes a little higher unless shock or the absorption of depressing toxins brings it down to normal or even sub-normal.

A normal temperature is often seen in the reaction stage of a ruptured gastric ulcer.

"If any patient with abdominal pain is found to have a temperature of 104 or 105 degrees F. at the onset of illness, the thorax or the kidney is very likely the seat of the disease." This dictum of Cope's[1] is one which has probably received abundant support from the experience of every practitioner.

I have not taken time to discuss the importance of fingers on the abdomen, but I am going to pause long enough to extol the virtue of a finger in the rectum. This, I believe, is one of the most neg-

lected means of obtaining information regarding acute abdominal emergencies. The reason for it is obvious, but if, as they tell me, older practitioners in the days before laboratory facilities were available, frequently tasted the urine of their patients whom they suspected of having diabetes, surely we can bring ourselves to soil a digit, if need be, for the good of our abdominal cases. When we consider that this method of investigation requires no special equipment except a finger cot or rubber glove for its accomplishment, that it is not hard on the patient, and that it is highly informative, we will surely not continue to avoid its use. The well lubricated, glove finger is passed well up into the canal. One immediately notes the presence of any masses, or loss of sphincter control which may indicate tabes or other central nervous system involvement. Forwards in the male one can detect an enlarged prostate, a distended bladder, or disease of the seminal vesicles. In the female one can palpate swellings in the pouch of Douglas, enlargements and displacements of the uterus. By passing the finger well up the canal impingement upon its lumen by tumor or stricture, or ballooning of the canal below an obstruction can be ascertained. The apex of an intussusception might be felt, though I have never encountered one.

It is especially important to test for tenderness on pressure against the pelvic peritoneum. A semi-soft or fluctuant mass of a pelvic abscess against the anterior rectal wall can readily be detected.

Laterally, one may be able to elicit tenderness due to an inflamed appendix or a small abscess on the lateral wall of the pelvis. I recall one case of an obviously acutely ill child who presented nothing unusual in either the history of physical examination except a story of very painful micturition for several hours and definite, agonizing tenderness on rectal palpation of the lateral pelvic wall. Urinalysis was negative. Operation showed an acutely inflamed and perforated appendix lying downward over the brim of the pelvis with infectious material draining downward over the bladder. The unusually intelligent mother had neglected to call a physican because of the absence of any abdominal pain together with the fact that the little girl had suffered from fairly frequent attacks of pyelitis in the past.

Posteriorly, one may determine the presence of any mass on the pyriformis muscle or in the hollo of the sacrum.

Upon withdrawal, the finger should be examine for the presence on it of blood, pus or mucus.

Vaginal examination, which gives comparable information, is, it seems, more generally used though still too woefully neglected in many cases where it might throw light on persistently obscure symptoms.

Auscultation is used, I believe, much too infrequently in abdominal examination. Certainly it gives information which can be gained in no other way. The loud, stormy, reverberating peristaltic sounds above the point of obstruction of an acute dynamic ileus and the absence of such sounds below this point is oftentimes sufficiently distinctive to establish the diagnosis. In all types of adynamic ileus there is marked diminution or complete absence of the peristaltic rush, depending upon the severity of the condition. When we pause to consider that the former type of obstruction demands the most immediate use of radical surgery, whereas the latter (or adynamic type) usually calls for more conservative measures, such as decompression with indwelling intestinal and rectal suction catheters, administration of fluids and the application of heat over the abdomen, we are more impressed with the value of a method which gives any aid in establishing the differental diagnosis. Metallic tinkling heard on auscultation is diagnostic of complete mechanical ileus. Flaxman[6] emphasizes the importance of these points and calls attention to the teaching that one should listen with the stethoscope over each abdominal quadrant for at least three minutes in all suspected cases of ileus, in an attempt to determine whether the ileus is paralytic, mechanical, non-surgical or operative.

Any acute gastro-enteritis, especially if due to poisoning with the heavy metals, with repeated vomiting and frequent watery stools so characteristic in such cases, must have very active peristaltic sounds. On the other hand, in acute pancreatitis, perforative peritonitis, or copious peritoneal hemorrhage, one should find a practically silent abdomen.

I venture to suggest that if the dictum, "Don't use the knife until after you have used the stethoscope," were more generally regarded, there might be a fewer occasions to revert to the older dogma,—"When in doubt, operate."

6. Auscultation of Abdomen. Flaxman, N. *J. A. M. A.*, 105:384, August 3, 1935.

There are four special procedures which I have seldom seen used but which have proven so very helpful to me in doubtful cases that I am going to describe them in some detail. The first two are taken from Cope.[1] One depends upon the determination of rigidity of the ilio-psoas muscle. It is performed by putting the patient on the opposite side and extending the thigh on the affected side to the full extent. Pain will be caused if the psoas be rigid from either reflex or direct irritation. It is especially of value in appendicitis and infections of the uterine adnexa where irritation of this muscle is especially liable to appear.

The second, or "thigh rotation test," depends upon the fact that when there is any inflamed mass adherent to the fascia over the obturator internus muscle, rotation of the flexed thigh so as to put this muscle through its full movements, will cause hypogastric pain. This sign should be resorted to whenever rectal examination is inadvisable or impossible.

It is positive when a perforated appendix, a local abscess, and occasionally when a hematocele is in contact with the obturator internus, or when there is an accumulation of inflammatory fluid in the pelvis.

The third is what I term the "peritoneal reflex test." In the simple abdominal colics gentle, but firm pressure of the palmar surface of the open hand usually affords relief from the pain, whereas in acute visceral disease within the abdomen this will increase the pain. If, in addition to this procedure, we press slowly and gently with the finger tips into the side of the abdomen opposite the point of greatest tenderness we may carry the palpating fingers fairly deeply into the abdomen and toward the affected side without causing the patient much pain. If, however, we suddenly withdraw the fingers the patient will cry out in agony provided there is any appreciable irritation of the peritoneum. The pain in such a case is due to the sudden stretching of the inflamed peritoneum by the quick release of pressure.

In my own limited experience I have found that if both the thigh rotation and peritoneal reflex tests are positive in any given case, immediate laparotomy had better be advised regardless of how trivial and obscure other signs and symptoms may be.

The last depends upon practically the same mechanism as the test just described. With the patient in the dorsal decubitus the physician takes between the thumbs and index fingers of both hands a large fold of the anterior abdominal wall at the lower right and left quadrants to discover any cutaneous hyperaesthesia and then exercises traction on the cutaneous folds.

When the parietal layer slips over the visceral layer in the pathologic zone an intense pain is produced. The intensity of the reaction is related to the peritoneal inflammatory process. Mortola,[7] who first described the maneuver, reports that in all (127) cases in which the maneuver provoked pain in one or both sides of the abdominal surface, unilateral or bilateral lesions of the periotoneum were found at operation.

In concluding this necessarily sketchy paper may I present in tabular form those conditions which must be kept in mind while establishing the diagnosis and determining the course of management of any acute abdominal emergency. Only those conditions which are met with most commonly in the every day general practice of medicine are included there being no attempt to include the unusual causes of acute abdominal manifestations since such an effort would amount to little more than a cataloguing of practically all medical and surgical conditions of whatever nature.

ACTUAL ACUTE ABDOMINAL DISEASES

Acute appendicitis—Sudden onset, characteristic pain, slight initial fever, local abdominal signs.

Inflamed or perforated gastric or duodenal ulcer—General appearance, character of pain, shock, vomiting, abdominal signs.

Acute pancreatitis (less than 1 per cent acute abdominal diseases)—Sudden onset, shock, collapse; early copious bile stained vomiting. Abdominal distention and tenseness.

Acute intestinal obstruction—Pain, shock, vomiting, constipation, distention, tenderness of abdomen; visible peristalsis.

Intussusception (the most common abdominal emergency in children under two years)—Abdominal pain, shock, passage blood and mucus by rectum, vomiting. Abdominal mass, visible peristalsis, constipation, tenesmus, distention, appearance of mass at anus, peritonitis.

Cancer and volvulus of large bowel: Signs of obstruction or ulceration, or both.

Incarcerated and obstructed hernia. Demonstration of hernia and signs of obstruction.

Torsion of ovarian cyst or pyosalpinx: Tumor and acute symptoms.

Ectopic gestation: Signs of pregnancy and pain and shock.

Cholecystitis—Pain, vomiting, fever, constipation, local tenderness in right hypochondrium, swelling in region of gall-bladder.

7. New Maneuver for Abdominal Examination. Mortola, G. A. *Pressa Medica Argentina,* Buenos Aires. 22:176 (September 11), 1935. (Abst. *J. A. M. A.*, November 16, 1935.)

XUM

Acute abdominal injuries—Surgical treatment is demanded by finding of signs of early peritonitis or intra-abdominal hemorrhage.
Pyonephrosis—Tender swelling in loin; high fever; toxemia; may be pyuria.
Perinephric abscess—Swelling in loin, local pain, fever, aspiration of pus.

DISEASES WHICH MAY SIMULATE THE ACUTE ABDOMEN

Influenza—General symptoms outweigh local.
Typhoid fever—Course of disease; laboratory studies.
Tuberculous peritonitis—Intestinal obstruction and perforative peritonitis sometimes occur in course of this condition and require surgical treatment.
Food poisoning—History of ingesting tainted food and immediate onset of illness. Absence of local signs, rigidity, etc.
Acute lymphatic and acute myelogenous leukemia—Blood count. Embolic phenomena. Splenomegaly.
Pleurisy or pleuro-pneumonia—Flushing. High fever from onset. Dilated alae nasi. Local signs in thorax.
Acute cardiac disease (especially angina pectoris and coronary thrombosis)—Diagnosis usually clear after careful examination of circulatory system.
Disease of the brain, spine, or spinal cord.[8] Acute osteomyelitis of dorsal or lumbar vertebra; Pott's disease of spine; tabes dorsalis. Diagnosis depends on local and neurologic signs.
Heavy metal poisoning, especially arsenic and mercury.
Uremia—Dry, furred tongue, albuminuria, variable blood chemistry.
Cerebral accidents—"Indigestion stroke." Blood pressure and local neurologic sign.
Diabetic acidosis.
Henochs purpura—Must be differentiated from intussusception in children.
Biliary colic—Intensity and distribution of pain, absence of local abdominal rigidity when pain passes off. (When associated with cholecystitis or local peritonitis, should be classified under ACTUAL ACUTE ABDOMINAL DISEASES.)
Pyelitis—Rigor, temperature 103 degrees F. or more, painful and frequent micturition. pyuria.[9-10]

8. Abdominal Pain as a Symptom of Disease of the Brain. I. S. Wechsler. *J. A. M. A.*, 105:646-648. (August 31, 1935.)

9. Symptom Diagnosis, Regional and General. Barton, Wilfred M., and Yater, Wallace, M. D. Appleton and Company. (Second Edition.) 1933.

10. Unrecognized "Strokes" and the Gastro-Enterologist. Alvarez, Walter C. *Am. J. Digest. Dis. and Nutrition.* 290 (April), 1935.

EYE INJURIES CAUSED BY STONE SPLINTERS—CASE REPORTS.*

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In the 1935 Yearbook of Eye, Ear, Nose and Throat there appears the statement that "There are few articles in the literature on eye injuries by stone splinters".

I do not know why this should be true unless eye injuries by flying stone chips are so numerous that no one thinks they are of sufficient interest to be reported.

These injuries are very frequent in stone masons and those who break stone in the quarries and on road construction. Often several men work close together breaking stone with sledge hammers while the splinters fly in all directions but chieftly against the legs. I have seen shins with dozens of bleeding puncture wounds which were made through the overalls. This gives an idea of the force with which they travel. With these splinters flying in all directions it is very easy to see that an eye injury may be caused by stone flying from any one's hammer.

These injuries may be prevented by wearing shatter proof goggles but the men do not like to wear them because of frequent fogging by dust and perspiration.

The treatment of these injuries varies with each case but follows any general procedure used in the care of traumatic wounds in this location—removal of the stone and grit followed with antiseptic drops or ointment and, in most cases, atropine. Immobilization of the lids by the use of an eye dressing strapped down by narrow adhesive. If there is any question as to remaining embedded stone, always X-ray.

CASE REPORTS

Case 1.—While breaking stone a splinter struck the right eye at the position of 9 o'clock, cutting through the sclera and cornea, with parts of the torn iris protruding through the wound. The anterior chamber was partly filled with blood. The torn iris was removed, leaving a horizontal key-hole pupil which later caused much annoyance on account of dazzling, especially from automoble lights. His correcting lens was fogged except a circular

area of 8 mm. in the center. This fogging was a great comfort. The final vision was 20/30.

Case 2.—One end of an unexploded dynamite protruded from a large rock. This man thought the charge "dead" so proceeded to break the rock with a sledge hammer. The dynamite exploded. There were probably a thousand puncture wounds from his toes to the top of his head. There were six or seven stone chips that tore their way into each eye. The result was total blindness.

Case 3.—A stone mason while chipping a stone was struck in the left eye between the limbus and external canthus, causing a puncture of the conjunctiva with a large subconjunctival hemorrhage. There was no permanent injury.

Case 4.—While breaking rock a chip struck the center of the upper lid a little above the margin, causing a gash in the skin. There was a hemorrhage beneath the conjunctiva, the pupil was irregular and dilated. A slight fogginess of the lens developed which cleared up after several weeks. The final vision was 20/20—2.

Case 5.—While breaking rock at the quarry a stone chip struck the left eye, cutting through the cornea from the lower pupillary margin, vertically to the limbus. The anterior chamber was collapsed. The lens was punctured and quickly became opaque. The lens was gradually absorbed, with a resulting vision of being able to count fingers.

Case 6.—While breaking rock a splinter struck the left eye, making a horizontal cut entirely across the center of the cornea. The wound healed readily with a resulting vision of 20/200.

Case 7.—While sloping a bank, ten days before coming in, his pick struck a rock. A small piece of stone penetrated the cornea of the right eye and embedded in the iris near the pupillary margin on the nasal side. There was a gray halo around the foreign body. A keratome incision was made on the nasal side, iris forceps were introduced and the pyramidal sandstone chip removed without difficulty. Where the iris was pinned to the lens margin there was a synechia and a small opacity of the lens which did not develop further. The final vision was 20/30.

Case 8.—This man was breaking rock in a quarry when a stone splinter, from his neighbor's hammer fifteen feet away, struck the lower lid of the left eye, making a vertical cut entirely through from the margin downward, necessitating several stitches. There was a subconjunctival hemorrhage and dilated pupil. There were several hemorrhages of the retina including one at the macula. The final vision was limited to finger movement.

Case 9.—This man was blowing out a hole with a compressed air drill when a small piece of stone struck the upper lid of the left eye just as it was closed. There was a contusion of the lid, the anterior chamber was filled with blood, and the pupil was dilated and irregular. At the end of two weeks the blood had been absorbed. Three months after the accident the pupil was still dilated, irregular and did not react to light. The lens and media were clear. There was a small macula scar. The vision was 7/200.

Case 10.—While breaking rock a chip from the hammer of the man who worked near struck the right eye, producing a right-angled puncture wound of the center of the cornea. The lens capsule was torn. A swelling of the lens developed rapidly, producing a gaping corneal wound. The swollen lens was washed out through the usual cataract incision without an iridectomy. This lens material was easily removed and with it came a small particle of stone which was embedded in the lens substance. The incision and the corneal wound healed readily leaving an angular scar over the pupil. The final vision was 7/200.

THE APICAL SYSTOLIC MURMUR.*

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I know of nothing in the entire realm of cardiology that has produced more speculation in recent years or given rise to more interpretations than the question of the apical systolic murmur. For the pendulum has swung from an opinion that regarded the murmur as the sign of a mitral regurgitation (and,

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therefore, ominous), to another opinion that under certain conditions it is of no importance. Such indeed has been the trend of opinion. At the present time, however, on the rebound of the pendulum, as it were, there is a tendency to a compromise position. So I may be pardoned for selecting this subject as my topic. Lately, I would explain, it has been my pleasure and privilege to review in some detail the entire subject of cardiology under my old teacher, Dr. Paul D. White, and his associate, Dr. Sprague, and so I shall borrow a phrase from Mathew Arnold and try to give you "the best that is known and thought," if I may apply the definition of criticism to a cause no less worthy.

It was formerly taught that the apical systolic murmur was the indication of a mitral regurgitation or insufficiency. It was, as we have hinted above, a sign that was not to be considered lightly, for with advancing age this regurgitation would grow worse and compensation would necessarily be lost. A relative insufficiency would become an insufficiency indeed. Nothing, however, was said about any accompanying signs, such as a presystolic or diastolic murmur, of the transmission of the systolic murmur to places other than to the apex, or of an increase in the size of the heart as measured by percussion, for at that time the use of the roentgen rays had not come into general use, as they had only recently been discovered. Nor was anything said in regard to a previous history of rheumatism. It must be said, however, that a general caution was extended that in any form of rheumatism a course of the salicylates should be begun, as the rheumatism might result in heart disease. In passing it must be considered whether a tonsillectomy, a course of the salicylates, or even a change to a warmer climate, will have a tendency to cure the patient. The latest teaching leaves this phase of the question as highly debatable.

But to return to our subject. At the time of the World War it was noticed that many men were excused on account of an apical systolic murmur, though in other respects they were of more than the usual physical condition. The instructions from Washington gave us no choice; these men were, I must repeat, excused. Then the new interpretation, begun by Lewis, was advised. It was then believed that if there were no accompanying murmur, no enlargement of the heart and no history of rheumatism, the applicant or drafted man must be accepted for full duty. They were, accordingly, accepted and so far as I am aware made good and suffered no inconvenience. It is only fair, however to remind you that the late Garnett Nelson, of Richmond, did not feel that this course of selection was a proper one. He still considered this apical systolic murmur, even though unattended by other signs or an increase in the size of the heart, was an indication of a regurgitation and advised that we should wait for a while before passing a final judgment.

And so we shall enter into some detail in the consideration of our subject. We shall, accordingly, divide the apical systolic murmur into two classes, the false and the true. To this end many subdivisions have been offered. Personally, I prefer the classification as given by Lewis. It is clear and concise. Thus he divides the false murmurs into the cardio-respiratory, the extracardial and the inconstant murmur. We have, accordingly, the familiar cardio-respiratory murmur. This is associated with the act of breathing and is usually of easy recognition. It is usually heard best at, or a little beyond, the apex, often over a wide area, and is a short, high-pitched, blowing sound. It is always associated with the breath sounds and is to be considered as a natural phenomenon. Second, the rather rare extracardial murmur, thought to be produced outside of the heart by a roughening of the pericardium or pleura, is consequently not easy of differentiation from murmurs of an endocardial origin. "During life," to quote Lewis further, "the distinction between the systolic murmurs that arise within and without the heart, so called 'endocardial' and 'exocardial' murmurs, is often impossible, unless the latter are represented by the characteristic, widely heard, to-and-fro friction sounds of recent pericarditis, or are frankly cardio-respiratory." And, lastly, the occasional murmur, sometimes heard and sometimes not, sometimes in one place and sometimes another, often of varying quality.

This brings up the question of the constant apical systolic murmur, relatively constant from day to day, sometimes louder, sometimes fainter, depending in pathological cases upon the improvement or non-improvement of the patient. Especially would I note the changes often to be observed in chorea or St. Vitus' dance, as well as in cases of other forms of a rheumatic carditis. These signs are thought to be due to some form of mitral regurgitation. But,

ere we discuss this phase of the question, another classification of the apical systolic murmur offers itself. I refer to a classification of a congenital apical systolic murmur and the acquired apical systolic murmur, and, again, under the head of the apical systolic murmur, those that are pure and those that are accompanied by other signs, such as an enlargement of the heart or a diastolic murmur.

A pure apical systolic murmur of a congenital origin would, of course, be looked upon as a rarity, though, after all, the apical systolic murmur, which is unaccompanied by an enlargement of the heart or other signs may be of such an origin. A pure apical systolic murmur would be interpreted as that arising from a congenital defect of the mitral valve, a defect, as it were, either of the ring or of the cusps. Its recognition would present no difficulty, but it is to be observed that in the young child such a defect would be confounded with that apical systolic murmur which arises as the result of rheumatic heart disease and which is later accompanied by a diastolic murmur. Here indeed is a phase of heart disease that a study by the roentgen rays might prove of more than passing interest. There is, however, a very frequent mid-systolic sound heard at the apex, unaccompanied by other signs or a history, that is at present exciting the interest of all of the students of the heart—a sort of persistent mid-systolic sound best heard in young children, which I cannot describe accurately. This is now looked upon as some defect (usually congenital) of the *chordae tendinae.* Personally, I have seen many cases through the courtesy of Dr. White and Dr. Sprague and I feel that once heard none of you should have any trouble in recognizing it.

And here comes the stumbling block, the *pons asinorum,* as it were, of modern cardiology. I refer to the pure apical systolic murmur that is unaccompanied by other physical signs or by a history of rheumatism or other infection. Lewis frankly considers this murmur of no significance and points to the fact that one of his patients endured the trials of an ascent of Mount Everest quite as well as any one that is usually considered normal. This question has also aroused a very keen interest in life insurance examinations. I remember very vividly the case of a prominent merchant that I saw for one of the large life insurance companies some years ago. Every examiner seemed to have a different opinion. There was indeed a very pronounced apical systolic murmur, but the teleroentgenogram showed the shadow of a normal heart. It was, as we have said above, this class of men who were definitely accepted for full military duty toward the close of the World War. Although these men did their duty quite as well as their brothers, made good and suffered no inconvenience, it is now believed that their period of longevity is somewhat shortened and that, after all, they do present a very definite mitral regurgitation, although a mild one, but one that does not interfere with their regular duty and does not incapacitate them in any way. Except for the probable shortening of the length of life, as we have noted above, they are quite as physically fit as their more fortunate brothers and never become the victims of a decompensation.

It has always been my own feeling that any valvular disease is more than apt to alter the size and shape of the heart, for, in order to compensate for the leak an increase in the thickness of the heart muscle, as well as in the capacity of the chambers, is necessary. Consequently, an examination by the ordinary methods, as by percussion, is not entirely satisfactory, for we can well imagine a heart, whose apex beat will lie outside of the midclavicular line and yet be normal, if it is pushed to the side by some thoracic lesion in the lower lobe of the right lung. Then, too, in general the right border of the heart is percussed with some difficulty and the arch only with the greatest difficulty. Although Hodges and Eyster have made a special study of the size of the normal heart both in males and females and for all ages in relation to the size of the chest, yet the majority of cardiologists still adhere to the old cardio-thoracic ratio and now consider that the sum of the distance from the center of the vertebral column or from the center of the sternum to the right border of the heart (Mr) plus a similar distance from the middle of the sternum to the left border of the heart (Ml) should be less than one-half of the internal diameter of the chest.

It is not my purpose to dilate further upon the apical systolic murmur or to take up in detail that subdivision where an enlargement of the heart is apparent or where the apical systolic murmur is accompanied by a diastolic one. We used to speak of these last murmurs as occurring as presystolic ones, but now the better judgment would consider them as distinctly diastolic. There is probably no

XUM

pure apical diastolic murmur as such; if such a murmur exists it must be very rare, for a mitral stenosis usually accompanies a regurgitation, or it may be referred from an aortic diastolic sound. But, again, I would say that it is not our province to discuss this or the third sound. Suffice it to say that when the apical systolic sound is accompanied by an apical diastolic murmur we are dealing with a combination of both a regurgitation and a stenosis. It is this combination that is to be regarded as an ominous one, one that is likely to grow worse as the patient advances in years unless materially checked, and which will give rise to a decompensation with all of its accompanying symptoms.

To sum up our discussion of the apical systolic murmur: We have those of both a false and a true quality; we have discussed those that are of a congenital origin and those acquired in some detail; we have also discussed the case of the pure apical systolic murmur unaccompanied either by a history of rheumatism or an enlargement of the heart or other physical signs. The case of the apical systolic murmur, as we have said above, accompanied by an enlargement of the heart or by a diastolic murmur is so apparent that no discussion is necessary.

Medical Arts Building.

TOXEMIA OF INTESTINAL ORIGIN AND ITS TREATMENT WITH CASTOR OIL AND CASTOR OIL DERIVATIVES.

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Several hundred papers dealing with intestinal toxemia have been published during recent years. The rationale of intestinal detoxification by various methods has been dealt with by eminent internists.

It is worthy of note that the skeptics have not put the theory of intestinal antisepsis to actual tests, but base their criticism on strictly theoretical grounds. On the other hand, those who advocate detoxification of the enteric tract in various disturbances support this form of therapy by successful clinical experiences. A famous doctor has said that it is not good science to disregard well attested clinical evidence.

INTESTINAL TOXEMIA

In the prevention of the chronic degenerative diseases[1] the energetic and constant regulation of autotoxemic tendencies and processes is bound to play a predominant part; and the control of these will largely depend upon the control obtained in preventing and treating successfully the abnormal bacterial and chemical decompositions, and the disorders of the gastro-intestinal canal. Senator, in 1866, advanced the theory that decomposition of proteins within the alimentary canal under ordinary conditions resulted in the formation of toxic substances. Banchard, twenty years later, demonstrated that the intestinal tract is the source of the largest number of poisons that cause autointoxication. In 1907, Metchnikoff wrote his book, "Prolongation of Life," in which he supported the view that toxins produced in the intestinal canal by harmful bacteria were the cause of premature old age. Arbuthnot Lane, in his book "Chronic Intestinal Stasis" (1910), attributed the cause of many disease entities to intestinal stasis. Within recent years numerous investigators have, by experimental and clinical studies, established the theory of intestinal toxemia on a firm scientific basis. According to Dr. C. H. Mayo, eighty-seven per cent of our deaths are traceable to infections. It follows that the effective way to fight most diseases is to ferret out these infections and destroy them. Evidence will be presented to show that the colon as a source of toxemia heads the list of focal infections.

Dorst and Morris[2] conclude from their studies that the underlying factor in a wide variety of chronic diseases (frequently diagnosed as chronic appendicitis, peptic ulcer, cholecystitis, spastic colitis and mucous colitis) is a hypersensitivity of the enteric tract to certain bacteria. "We are . . . trying

to explain the clinical picture of 'autointoxication', spastic colon, and mucous colitis and the varied symptomatology which such terms at once bring to the clinician's mind, on a scientific basis. Our experimental data . . . and our clinical studies lead us to believe that the underlying factor in these conditions is a hypersensitivity of the enteric tract to certain bacteria. We also believe that the organisms most frequently responsible are those which have always been included under the heading, 'normal flora'. The hypersensitivity of the enteric tract results in local spasm of certain portions of the colon . . . with ensuing constipation and a whole train of reflex aberrations which follow the interruption of the normal colonic rhythm. . . . Such hypersensitivity permits the absorption into the blood stream of large amounts of toxic products, resulting from bacterial metabolism, thence to the liver; when their concentration is sufficient to pass the threshold interposed by the detoxifying function of the liver they pass into the general circulation, giving rise to the clinical picture perhaps best recognized under the term, autointoxication."

Herter[3] states that the colon bacteria have no power to dissolve and peptonize native proteins, such as casein or egg albumin, but proteins in the colon may be changed by putrefactive anaerobes to peptones and these split products affect the colon bacillus as "fire water" affects an Indian. They readily disintegrate peptones into putrefactive products, such as ammonia, volatile fatty acids, phenol, indol, skatol, and hydrogen sulphide. Thus, in the presence of peptones, bacilli coli frequently become active participants in excessive intestinal putrefaction and, from mild strains producing physiological functions, many species are changed to pathologic types with two outstanding virulent groups, those producing acute symptoms, and the other, prolonged pathologic effects.

Bassler[4] states that hemolytic, nonhemolytic, and fecal streptococci may be innocent inhabitants of the intestinal tract. However they may migrate from the bowel and become locked up in a tooth, tonsil, gall bladder, urinary bladder, kidney or the prostate, and become criminals.

Jamison[5] says: "The blood in the portal veins, which comes from the intestinal canal, is definitely toxic. There is a limit to the detoxicating ability of the liver. After long continued irritation from intestinal poisons the hepatic cells become refractory. Then the detoxicating function of the liver is lost and poison gains access to the general circulation."

Rose[6] emphasizes that the colon is a frequent source of disease. He believes that it heads the list of focal infections when considering other common foci such as the teeth, tonsils, prostate glands, etc. The frequency of ulcer, gastritis, cholecystitis, appendicitis and colitis should be sufficient to lead physicians to give more attention to the intestinal flora and attempt to limit the growth of pathological bacteria therein. But when, in addition, we contemplate the diseases of various organs and tissues of the body which may arise from the colon as a source of toxemia or infection, this flora picture assumes a still broader and more far-reaching significance.

Redewill, Potter and Garrison[7] report a group of twenty-two cases, selected from hundreds of cases of chronic infections of the urinary tract that were particularly resistant to the regular methods of urologic treatment. There were five cases of pyelitis, four of cystitis, and thirteen of prostatitis. Therapeutic methods to correct the colon conditions cleared up the genito-urinary infections. The surprising feature is, that for months and even years previously, when no attention was paid to the colon condition, the patients did not respond at all to urologic therapy. It was only when the colon was treated together with urologic treatment that the chronic genito-urinary infections cleared up in a comparatively short time.

"We believe that the pathologic colon plays a direct etiologic part in both acute and chronic nongonorrheal genito-urinary infections. If there are at the same time other sites of focal infection, such as in the head, throat, lungs, or gall bladder, these conditions aggravate the colon condition. Identical bacteria found in the abscessed teeth will be found teeming in the intestinal flora and will be the offending organisms in the . . . genito-urinary infection. Many of these bacteria seem to display a faculty for specific localization, as pointed out by Rosenow, Bassler, Albee and others." This series of twenty-two represents cases in which practically every known urologic remedy had been tried. The focus was in the colon and by treatment of the colon a cure was produced in the genito-urinary tract

XUM

after other means had failed. Colon bacillus, the most frequent form of urinary tract infection is at times difficult to eradicate by the use of urinary antiseptics. The reason for the failure in the opinion of A. M. Crance[8] is a septic overload in the colon. Many of these cases give a history of chronic constipation or of some intestinal upset such as diarrhea prior to the onset of urinary symptoms. The colon bacillus, whose natural habitat is the colon, is impelled to seek a new residence by virtue of its increase in numbers; by gaining entrance to the lymphatic system it finds its way to the kidney, there becoming a pus producing organism. The treatment, therefore, is more a matter of treating the colon, the focus of infections.

EFFECTS OF INTESTINAL TOXEMIA ON SPECIAL ORGANS

Nervous System: Ferraro and Kilman[9] attribute pathologic changes in the central nervous system to the action of toxic substances present in the gastrointestinal canal. Among the various agents the authors have considered especially indol and histamine. For many years histamine has been considered responsible for the onset of mental conditions, whereas indol has been neglected. The fact that mental disorders are very often accompanied by gastrointestinal disturbances, and that the injection of indol and histamine in normal animals produces some of the manifestations present in psychoneurosis, seems to substantiate the contention that in one group of mental diseases the source of origin is gastrointestinal toxemia.

The Liver: Boix showed that the various acids and cresols of intestinal fermentation and putrefaction, as well as the toxins manufactured by various bacteria, including the colon bacillus, could produce atrophic cirrhosis of the liver. Toxic action takes place and hepatic cirrhosis supervenes after continued irritation of gastrointestinal origin. A true cirrhosis finally develops due to the absorption of poisons by a liver which is steadily losing its capacity for dealing with them.

Circulatory Disorders: It is daily demonstrated in practice that the subtle but sure effect which gastrointestinal poisons have upon the development of hypertension in the arteries later leads to actual arteriosclerosis. Metchnikoff believed that his experiments with paracresol and indol showed that these substances were capable of inducing chronic lesions of a sclerotic nature. Such lesions are the very ones that are encountered most frequently in senility. It seems to be established beyond question that the colon bacillus and other bacteria produce poisons which can be absorbed by the normal walls of the intestines and are capable of causing insidious lesions in the arteries, heart, etc.

Anemias: Pernicious anemia and perhaps some cases of secondary symptomatic anemia are due to hemolytic agents of toxic nature, absorbed from the alimentary tract, entering into the portal system. Charlton[10] was able to produce anemia in rabbits by repeated intravenous injections of colon bacilli. The animals developed spinal cord lesions resembling those observed in pernicious anemia in man.

Respiratory Disorders: There is justification for believing that some cases of acute dyspnea are of toxic gastrointestinal origin. Asthma and emphysema are certainly aggravated in connection with dyspeptic attacks if they are not directly produced by intestinal toxins.

Eye: Risley, De Schweinitz, Ziegler, and other well-known occulists have shown conclusively that the intestinal tract is often the source of autotoxemias which are directly or indirectly responsible for such ocular diseases as blepharitis, keratitis, iritis, and certain neuroretinal lesions.

Skin: It is a common observation that urticaria, erythema, and angioneurotic edema, as well as pigmentation of the skin, may all be due to intestinal autotoxemia. Some of the eczemas are likewise of gastrointestinal toxic origin in children as well as in adults. The doctrine of anaphylaxis as applied to the alimentary canal rationally explains the marked affinity manifested by the skin for putrefactive substances in those who are peculiarly sensitive to certain articles of diet.

Gall Bladder: Hurst[11] believes that the majority of cases of gall bladder diseases are due to infection with colon bacillus and are the result of an ascending infection to the gall bladder from the duodenum.

Naunyn[12] states that the colon bacillus is responsible for eighty per cent of gall bladder infections, while Petersen, in fifty operations for gall stones, found bacillus coli of pure culture in thirty-six and associated with other bacteria in six.

Rheumatism: Plimmer[13] says that chronic rheumatoid arthritis owes its origin to the passage of

bacillus coli into the tissues through degenerated wall of the intestine.

Arthritis: Fred H. Albee[14] says: "Of the many possible foci of origin of toxicity, the colon stands at the head in frequency. In the majority of the cases (arthritis) which I have seen it has been the offending source. It has further been observed that in case of long standing oral infections, whether the primary focus be in tonsils, teeth, antra or other sinus, there is likely to be a residuum and, in addition, some toxicity in the colon."

Halitosis: Mills[15] believes the fact that halitosis and pyorrhea, usually considered to be of local origin, disappear promptly as intestinal putrefaction is eliminated, suggests that these conditions etiologically depend primarily upon intestinal toxemia.

Meningitis: Hartshorn[16] collected from the literature thirty-four cases of meningitis in infants due to the colon bacillus. In some the infection followed pyelitis or cystitis; in others it apparently arose directly from the intestinal tract subsequent to an attack of enteritis.

Backache: "I believe that the greatest cause for indefinite backache is absorption from the intestinal tract." Fitts, Dr. J. Blair, Stuart Circle Hospital Bulletin, 6:(1)16 (April), 1936.

TREATMENT

According to Stimson,[17] sodium ricinoleate is produced by saponifying castor oil. This action takes place in the bowel when castor oil is ingested and comes in contact with the alkaline secretions of the duodenum. Professor W. P. Larson (University of Minnesota) in 1919 was the first to demonstrate that sodium ricinoleate is capable of neutralizing bacterial toxins. Sodium ricinoleate does not act as a germicide. It has, however, the property of combining with the decomposition products of bacteria, thus possessing the power of detoxification. Since detoxification is an absorption phenomenon, the toxin molecule apparently absorbs ricin, rendering it inert in its action upon tissues.

Catoni and Cesari[18] verified Larson's results upon the action of sodium ricinoleate on various pathogenic agents, their toxins and endotoxins. These investigations confirm and extend the detoxifying action of sodium ricinoleate which was demonstrated by Larson towards various toxins.

Kline[19] treated fifteen cases of intestinal tuberculosis with sodium ricinoleate and reports the following results: "The relief afforded by sodium ricinoleate is fairly prompt according to the degree of symptoms and this relief persists for a variable length of time. . . . It appears to maintain the normal intestinal gradient and to reduce toxemia; and that it shows evidence of relieving the symptoms attendant upon intestinal tuberculosis without the necessity of producing purgation."

Morris and Dorst[20] have shown that sodium ricinoleate is capable of rendering bacterial antigen non-toxic. As evidence, they cite the fact that antigen, which when injected intradermally produces a marked local reaction, is no longer capable of producing such reaction after treatment with ricinoleates. These authors treated a large group of individuals for intestinal disturbances ranging from chronic constipation to mucous colitis. Previous treatment for these disturbances had proven unsatisfactory. They obtained excellent results from the daily administration of castor oil, and even better results when sodium ricinoleate was substituted. Rankin, Bargen, and Bui[21] find that the recent suggestion of detoxifying enteric flora by sodium ricinoleate has undoubtedly been of value in some cases. Jackson[22] says: "At the moment we know of no detoxifying agent which acts so rapidly and efficiently as sodium ricinoleate."

Contrary to the general impression, castor oil does not act as a purgative when administered for a length of time. Dr. Beverley R. Tucker has been able to control the diarrhea of pellagra with one-half to one ounce doses of castor oil given every night at bed-time.

"Castor oil possesses detoxicating properties supplied by no other drug; and the appearance on the market of preparations in which its nauseating odor and disagreeable taste have been eliminated, will create a renaissance of this excellent medicament." In treating the conditions discussed here we employed an emulsion of ricinoleate ester with liquid petrolatum, having available 80 grains of sodium ricinoleate to the ounce.

A diet rich in vitamins and minerals, the so-called "protective diet" supplemented with cod liver oil and brewer's yeast, has proved of undoubted value for increasing the resistance of tissues against infections.

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SUMMARY

1. The colon is the principal focus of infection in toxemia and should receive at least as much attention as the teeth, tonsils, etc.

2. Many constitutional disturbances as well as those of the abdominal cavity have their source of origin in a toxic condition of the enteric tract.

3. The so-called "normal flora" of the intestinal canal may assume pathological activities under favorable conditions.

4. The colon bacillus is the agent most frequently responsible for non-gonorrheal infections of the genito-urinary system.

5. Measures aimed at the detoxification of a septic colon will often help in solving a difficult diagnostic problem.

6. The theory of intestinal toxemia is supported by clinical experience. Evidence is presented on the detoxifying effect of castor oil and its conversion product, sodium ricinoleate.

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Professional Building.

ECLAMPSIA—CRURAL MONOPLEGIA OF CORTICAL ORIGIN.*

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Certain features of the following case of eclampsia warrant its recounting:

H. M., gravida 1, para 0, age 21, was admitted to the emergency clinic at 12 noon, November 25, 1934. Two hours before, she had had a convulsive seizure which, from its description was certainly eclamptic. Physical examination revealed a toxic-looking young girl with feet, ankles, legs, hands, and face edematous. Her blood pressure was 168/110. Fetal heart sounds were regular—rate 156. Height of the fundus was 27 cm. She was not in labor, had no bleeding nor any muscular twitching.

This patient registered for prenatal care September 10, 1934, when about five months pregnant. Prior to her pregnancy her history was of no importance. In the early months of pregnancy there had been more than the expected amount of vomiting. Blood pressure on registration was 96/50; the urine had a faint trace of albumin. When next seen, September 24th, she was complaining of spots before the eyes and occasional dizzy spells. Her blood pressure had increased to 127/80. After six weeks on a toxic regimen the blood pressure re-

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turned to 110/70, and there had been no more symptoms of toxemia. On November 19th, the blood pressure was 132/86, and there was a distinct trace of albumin present. Inadvertently she was allowed to go home without advice or treatment, and when next seen it was in the emergency clinic. During the intervening time she had been feeling all right except the day previously when she had had a severe headache and some dizziness.

Treatment was begun at once—morphine, sodium amytal by mouth and 50 per cent magnesium sulphate intramuscularly. While being given 50 per cent glucose intravenously half an hour later, she had another eclamptic seizure which lasted three to four minutes. Nothing by mouth was given until the next morning, except sodium amytal. Fifty per cent magnesium sulphate was administered twice, intramuscularly, and morphine once during the night. At eight-thirty A. M., November 26th, she seemed better. Five ounces of urine were obtained per catheter. Specific gravity was 1.034; albumin 4 plus; hyaline casts were present.

Rucker's[1] so-called simplified treatment was begun. Intravenous 50 per cent glucose was given about every six hours.

November 27th. *Urinalysis:* albumin 4 plus; specific gravity 1.032; occasional red blood cells; fine and coarse granular casts. *Blood examination:* Urea nitrogen 63.4, chlorides 440, and CO_2 combining power 43.9 per cent. The fetal heart had not been heard since the evening before. The patient seemed irrational.

November 28th. There was no voluntary movement of the right leg which seemed rather clammy. Passive movements were accompanied by no pain. Perception of cold, heat, and deep and light pressure were present. Mrs. M. was still irrational. The urinary output had been inordinately low, not over five ounces being passed at a time and that infrequently. We were sure this was not an overflow. She was voiding voluntarily after the first day.

November 29th. No change. Blood urea 47.3, creatinine 1.2, chlorides 460. At this state it was decided not to force fluids any longer but to try to make the intake equal the output.

At this time, ten to twelve ounces of fluid were present in the watery stools she was passing. At 4:00 P. M. this patient was examined by a neurologist. "Patient is orientated, not fearsome, euphoric, homesick. Some slight confusion, readily set right. Eyes negative; face and tongue negative; grips with both hands. Complete paralysis of right lower extremity. Possibly some slight movement in knee. Babinsky, knee jerk more active on right. No Oppenheim. Sensory, pin prick very little less on the right. Provisional diagnosis: Cerebral crural paralysis due to thrombosis of branch of anterior cerebral artery to quadrate lobe."

December 1st. Blood pressure 166/100. The edema was less and she was more rational than before. There was some movement of the right leg. The urinary output had increased. Uterine contractions began about 11:00 A. M. and a macerated fetus delivered at 6:00 P. H.

December 3rd. She complained of poor vision and some diplopia. The entire fundus of the left eye was blurred and it was thought choked disks were present. What was intriguing was that the paralysis of the right leg had disappeared.

From the third until the eighth, improvement was steady. The urinary output became normal and the blood pressure dropped to 140/100. *Blood chemistry:* Urea nitrogen 24.8; chlorides 480; CO_2 combining power 50.7 per cent. Edema had disappeared.

December 8th. Eye examination: Marked vascular disturbance and distortion of both arteries and veins in the right eye and mildly choked disks. There was the same vascular disturbance in the left eye with pronounced edema in the upper quadrant. Small flame-like hemorrhages extended along the course of the inferior temporal artery. To protect the eye because of the retinitis present, the patient had a voluntary ptosis of the left eyelid.

December 10th. Urinary output normal with a very faint trace of albumin and an occasional fine granular cast. The diplopia had disappeared, but there was slight blurring. She was discharged to report to the Medical Service.

Six weeks later blood chemistry and urinary reports were normal. Except for a slight neuroretinitis of the left eye there were no remaining sequelae to her eclampsia.

COMMENT

Prenatal care must be intensive and unrelenting. At the New York Polyclinic Hospital this has been the only case of ante-partum eclampsia in two years. There was one of intra-partum eclampsia during this time—the convulsive seizure was very short. If

XUM

prenatal care had been a little more rigorous, perhaps there would have been no occasion for this report.

Crural monoplegia of cerebral origin is rather rare. Russell[2] reports two cases and cites three others. None of these were post-eclamptic. In one of his reported cases, function returned in three weeks. At necropsy, when the patient died from coronary thrombosis eight months later, evidence was found of a former thrombus probably in the callosomarginal branch of the right anterior cerebral artery. In our case the paralysis had disappeared at the fifth day after the onset and improvement was noticed on the third. We do not believe a lesion that was the result of a thrombus would clear up this quickly; rather would we attribute the monoplegia to vascular spasm. That it was cerebral in origin is evidence by the signs presented[3] and the cerebral symptoms accompanying it.

From the studies of numerous investigators, it is becoming more and more likely that vascular derangement is a precursor to the toxemias of pregnancy and eclampsia. This derangement seems to be in the form of a vascular spasm with a venous congestion. The familiar eye ground changes seen in our case and the unusual monoplegia, which, because of the short duration, must have been caused by vascular spasm, would tend to implicate the circulatory system. Haselhorst and Mylius[4] photographed intermittent and abnormal constriction of the retinal vessels in toxic patients. Wright[5], although he noticed spasm of the retinal vessels only once in a series of twenty-eight cases, says it was probably missed because of the hurried examinations which had been done in another hospital. McKelvey and McMahon[6] in their excellent and illuminating study of renal pathology following fatal cases of nephritic toxemia of pregnancy found the most striking lesions to be in the vascular system. Brown has very wisely said that a functional disorder by repeated insults will eventually cause a pathological condition. It is our belief nephritic manifestations, retinitis, and other conditions related to pregnancy toxemia, at their onset are functional disorders occasioned by vascular spasticity. As to the vascular irritant which is causing this spasticity, it is our opinion that it is endocrine in origin. Goodall,[7] Hoffbauer, and others place the toxic agent in pregnancy toxemia in the pituitary body.

Toxemia of pregnancy is solely a woman's disease and she has it only when there is a growth in the uterus or surrounding tissue which is a product of conception. Because some cases of hydatidiform mole have been reported to be complicated by toxemia of pregnancy, it would seem that the chorion and chorionic villi have a part in the causation of this disorder.

This would cause us to think of the placenta as the exciting agent in toxemia. Ware and Main[8] in reporting a case of abdominal pregnancy found prolan to be excreted for thirty-six days after operation. The placenta was left in situ at the time of delivery. After a normal delivery negative tests for prolan are obtained within seventy-two hours. Ware and Main in commenting on their case say that either the placenta is *causing* the excretion of the gonadotropic hormones of the anterior pituitary or, more probably, is *actively secreting* prolan. Smith and Smith[9] find an excess of anterior pituitary-like principle in cases of toxemia during the latter months of pregnancy. Evans[10] says this gonadotropic hormone is probably derived from the chorion. It would seem that the hormonal irritant insulting the vascular system is placental in origin and may be traced to a disorder in the secretion of prolan. This in turn by reciprocal action may cause pituitary and other glandular dysfunction. It is interesting that the crural monoplegia which was very probably due to vascular spasm began to clear up as soon as the placenta was delivered, the fetus having been dead sometime before. It is notorious that toxemias of pregnancy improve after delivery of the placenta.

SUMMARY

A case of eclampsia is reported.

During the course of the affection there was a temporary crural monoplegia of cortical origin. Probably this is the first case reported to be concommitant with eclampsia.

It is thought that the exciting agent in toxemia of pregnancy has its basis in a malfunctioning of the placental excretion of prolan, causing a vascular spasm.

ADDENDUM

While the final draft of this report was being prepared, the article of Smith and Smith published in *Surgery, Gynecology and Obstetrics,* August, 1935 (page 175) was called to the author's' attention. Smith and Smith studied the excretion of prolan in

pregnancy toxemias. They reached these conclusions:

"Quantitative analyses have shown that the placentas of toxemic and eclamptic patients contain excessive amounts of prolan and tend toward low levels of estrin as compared with the placentas of normal pregnancies.

"It is concluded that the excessive amounts of prolan previously reported in the blood and urine of toxemic and eclamptic women, as well as the tendency toward low levels of estrin, have their origin in the placenta.

"It is suggested that a continued overproduction of prolan by the placenta is probably a related factor and possibly causal in the etiology of late pregnancy toxemia and eclampsia."

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413 Masonic Temple.

Public Health Statistics

I. C. RIGGIN, M. D.
State Health Commissioner of Virginia

The communicable disease reports received at the office of Dr. G. F. McGinnes, State Epidemiologist, for the month of June, 1936, show the following cases compared with the same month in 1935.

	1936	*1935*
Typhoid and Paratyphoid	30	67
Diphtheria	29	32
Scarlet Fever	76	85
Measles	318	1,160
Meningitis	29	41
Poliomyelitis	0	52
Rocky Mountain Spotted Fever	12	6
Typhus Fever	1	0
Undulant Fever	3	9
Tularaemia	3	4
Smallpox	1	0

DIPHTHERIA IMMUNIZATION

The number of cases of diphtheria reported to the Virginia State Department of Health in 1935 was the lowest on record. During this year there were 1,502 cases reported. This represents a decrease of 487 over the number of cases reported in 1934 and a decrease of 1,150 over the average for the past five years. This gratifying decline is attributed to the continuation of the immunization campaigns throughout the State which have been made possible by the cooperation of the local physicians with the various health agencies.

Having advanced this far it would indeed be unwise to rest "on our laurels" so to speak. With renewed efforts to secure immunization against diphtheria for all pre-school children, in which age group the susceptibility to the disease is the greatest, a further reduction in the incidence of diphtheria in Virginia can be effected.

With the exception of smallpox vaccination, perhaps the most important success in the prevention of disease by specific immunization has been in diphtheria.

Now is the ideal time in which to immunize those children who will enter school for the first time this fall. During August and September these children can be prepared to enter school protected against diphtheria, the disease to which they are particularly susceptible and which has its highest

incidence during the first few months of the school term. Likewise those children who are return pupils but who have not yet developed immunity to diphtheria as evidenced by a positive Schick test, should be given protection.

Let it not be inferred, however, that immunization should be postponed until time for entering school. Every child should be given diphtheria prophylaxis between six months and one year of age. Again, upon entering school, his immunity status should be determined by the Schick test. If the child requires further protection, immunization should be repeated. With this procedure, universally adopted, we may perhaps look forward to the time when the disease will be rare indeed and deaths from it most unusual.

Woman's Auxiliary to the Medical Society of Va.

President—MRS. FLETCHER J. WRIGHT, 49 S. Market St., Petersburg.

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Woman's Auxiliary to the Norfolk County Medical Society.

At its May meeting this auxiliary elected the following officers to serve for the ensuing year: Mrs. B. A. Doggett, President; Mrs. Charles Devine, President-Elect; Mrs. R. M. Reynolds, First Vice-President; Mrs. P. St. L. Moncure, Second Vice-President; Mrs. Millard Savage, Third Vice-President; Mrs. Alex Mayo, Recording Secretary; Mrs. R. E. Altizer, Assistant Recording Secretary; Mrs. A. A. Burke, Corresponding Secretary; Mrs. Albert Crosby, Treasurer; Mrs. K. W. Howard, Historian; Mrs. H. W. Rogers, Assistant Historian; and Mrs. M. N. King, Parliamentarian.

The Annual Health Day Program recently held at the Norfolk Woman's Club was arranged by this auxiliary. Dr. R. F. Slaughter, who was introduced by Mrs. C. C. Smith, addressed the Woman's Club on the work of the Mental Hygiene Clinic at St. Vincent's Hospital.

The Auxiliary is making a plea to the public for children's magazines and games to be used in the service centers operated by the Works Progress Administration. Arrangements have been made by the members to call for any contributions that are offered.

Woman's Auxiliary to the Richmond Academy of Medicine.

A business meeting was held by this Auxiliary in May, this being the last meeting until September. Efforts were made to wind up all business details by the Chairmen of the various committees, thereby clearing the slate of this auxiliary as far as possible during the summer months. The Chairman of the Milk Fund reported that the final check had been sent to the Medical Director of Public Schools, covering milk furnished to undernourished children during the past school term. A check for $100.00 has been sent to the Treasurer of the Richmond Academy of Medicine, this amount being a payment toward a number of shelves which have recently been installed in the new Pathological Museum of the Richmond Academy of Medicine. This auxiliary gave $100.00 last year as a Foundation Fund for these shelves. Reports indicate that approximately $165.00 was realized on the Cooking School which was held in May and sponsored by this auxiliary in conjunction with three other organizations.

Petersburg Auxiliary.

The Petersburg Unit of the Medical Auxiliary held its May meeting at the Nurses' Home. There was no program planned as the meeting was to be short in order for the members to attend in a body the graduation exercises of the senior class of nurses of the Petersburg Hospital.

The linen shower for the hospital and the rummage sale were discussed. The former, one of the main projects of the year for the auxiliary, was ably supported by the churches of Petersburg. Each contributed through the auxiliary to make the shower a success for the hospital. The latter, the biannual sale, was also an outstanding success. The proceeds of $50.84 was put in the treasury's fund.

The meetings of the auxiliary were decided to be discontinued until the last Tuesday in September.

Woman's Auxiliary to the James City-New Kent County Medical Society.

Mrs. J. M. Henderson entertained this Auxiliary with a luncheon at her home in Williamsburg, in May. Members attending were Mesdames T. B. Henderson, W. L. Smoot, E. T. Terrell, B. I. Bell, J. R. Tucker, and L. V. Henderson, of Williamsburg, and Mrs. A. M. Snead and Mrs. E. D. Kilby, of Toano. The guests were Mrs. Fletcher J. Wright, State President, and Mrs. H. M. Snead, State exhibit chairman, both of Petersburg. Mrs. Wright gave an interesting talk about her trip to the national convention of the American Medical Association in Kansas City. Following the talk, a memorial service, in observance of "Doctor's Day," was held for Dr. Southgate Leigh. The regular business was taken up after the service.

(MRS. L. V.) MABEL R. HENDERSON,
Reporter.

Book Announcements

Russell A. Hibbs. Pioneer in Orthopedic Surgery. 1869-1932. By GEORGE M. GOODWIN. Columbia University Press. New York. 1935. Octavo of x-136 pages. Illustrated. Cloth. Price, $3.50.

This short life of Dr. Russell A. Hibbs of New York, who died in 1932 is not only the story of his life but the story of the New York Orthopaedic Dispensary and Hospital. Although the hospital was founded in 1868, the period from Dr. Hibbs' appointment in 1900 as surgeon in chief until his death in 1932, included both the building of a new city hospital and of a convalescent country hospital and the foundation of a system for training men in orthopaedic surgery which may serve as a model for other such clinics.

Dr. Hibbs was not only an able surgeon, with original ideas and the strength of character to adhere to what he believed correct surgery against widespread professional opposition, but he was also an excellent organizer with a genius for obtaining the funds necessary for the help of indigent cripples and the training of men to aid them. When $500,000 was offered him by the trustees of a large estate for the establishment of fellowships in orthopaedic surgery, he refused it on the ground that the fund was inadequate. Not long afterwards, the million dollars which he considered the minimum sum necessary was granted by the same trustees.

This account of his original work in surgery and of the impetus his plans have given to the training of orthopaedic surgeons is supplemented by tributes from two of his personal friends.

DONALD M. FAULKNER, M. D.

Certified Milk. Proceedings of the Twenty-fifth, Twenty-sixth, Twenty-seventh, and Twenty-eighth Conferences of the American Association of Medical Milk Commissions, Inc. In conjunction with the Certified Milk Producers' Association of America, Inc. Octavo of 363 pages. Cloth.

Psychopathia Sexualis. With Especial Reference to Contrary Sexual Instinct. A Medico-Legal Study. By DR. R. VON KRAFFT-EBING, Professor of Psychiatry and Neurology, University of Vienna. Authorized Translation of the Seventh Enlarged and Revised German Edition by CHARLES GILBERT CHADDOCK, M. D., Professor of Nervous and Mental Diseases, Marion-Sims College of Medicine, St. Louis; etc. Philadelphia. F. A. Davis Company. 1930. Octavo of xiv-436. Cloth. Price, $4.00 net.

Psycopathia-Sexualis Kraft-Ebing is a source book and is a necessity, a part of every library. The present edition is a reprint.

First published in 1892, it has been a recognized authority and will probably continue so. Its value lies in its classification, and its enormous mass of clinical material. Psychologically it is archiac. The wonder is that any book, first published in 1892, is still worth reprinting.

T. W. M.

Heart Disease and Tuberculosis. Efforts Including Methods of Diaphragmatic and Costal Respiration to Lessen Their Prevalence. By S. ADOLPHUS KNOPF, M. D., New York. Issued by the patients at The Potts Memorial Hospital for the rehabilitation of the tuberculous. The Livingston Press. Livingston, New York. 1936. 12mo of 108 pages. Illustrated. Cloth. Price, $1.25.

The title of this book was intriguing for the reviewer was hopeful that the author would discuss the relative frequency of heart and vascular disease in patients who have pulmonary tuberculosis, but it soon became apparent that the primary object of the writer was to emphasize the importance of so-called diaphragmatic respiration in the prophylaxis and treatment of patients who have all types of heart and vascular disease. It is to be recalled that the same author introduced this method of physical exercise in the treatment of pulmonary tuberculosis.

The volume was reviewed with considerable care and as the final conclusion of this review it must be stated in perfect frankness that there does not ap-

XUM

pear to be any justification for this volume. Most of the statements made are based upon either illogical hypotheses or erroneous interpretation of physiological facts. There undoubtedly is a place for both physiotherapy and regulated physical exercise in the treatment of cardiac and vascular disease, nevertheless, it would seem unwise for one to conclude that any single procedure can be a panacea for the complicated disturbances which affect these systems.

As a whole the book is poorly organized, the subject matter is ambiguous, and the conclusions drawn unjustified. W. B. P.

Synopsis of Diseases of the Heart and Arteries. By GEORGE R. HERRMANN, M. D., Ph. D., Professor of Clinical Medicine, University of Texas. St. Louis. The C. V. Mosby Company. 1936. 12mo of 344 pages. With 88 Text Illustrations and 3 Color Plates. Cloth. Price, $4.00.

The reviewer is probably not as enthusiastic about this volume as he might be for the reason that he is instinctively prejudiced against synopses. The author states that: "For the medical undergraduate hard pressed for time in a crowded curriculum, and the physician, equally harassed in the caring for a general practice, it is hoped that this book will render the service they require." I have often wondered whether synopses should ever be designed for individuals in these categories for a book of this type must be dogmatic and brief, and in many instances the statements made are somewhat confusing due to the technique used in an effort to be brief.

This particular synopsis is a most complete review of all of the aspects of cardio-vascular disease for it covers not only the history which should be taken in patients having cardiac disease, but discusses with considerable clarity all special methods of study, the technique for the use of these methods, and covers briefly the orthodox interpretations which should be had from the accumulated data. Yet, authors of synopses apparently fail to realize that those for whom the book is designed are the very individuals who can least safely use such an abbreviated compend.

Hurriedly going over the book there were several omissions noted which illustrate my reasons for having an adverse reaction to volumes of this character. On page 48 in the discussion of a two-hour urinary concentration test the author fails to comment upon the very important fact that this observation may be misleading when the edema of congestive failure is subsiding. This is due to the fact that removal of edema from the subcutaneous tissue dilutes the urine just as if the person were drinking a large amount of water. Under the section Cardiac Manifestations in Hyperthyroidism, page 125, the statement is made that: "Rales at the lung bases, engorged liver, and edema of the extremities may be present when congestive failure has intervened." I am certain the author meant to say that these phenomena existed only in the event that congestive failure intervened. In the discussion of the physical phenomena of subacute bacterial endocarditis the author has unfortunately chosen as his illustration (page 236) of clubbed fingers a patient who had endocarditis associated with the cyanotic type of congenital heart disease. The facts are that bacterial endocarditis unaccompanied by cyanosis, which is the rule, has the so-called Hippocratic or beak fingers rather than the flat bulbous fingers noted in chronic cyanosis.

In the chapter on the treatment of syphilitic cardio-vascular disease, the dose of potassium iodide is given as fifteen grains to sixty grams three times a day. I am wondering if this is not a typographical error for a dose of nine hundred grains three times a day would be rather excessive.

One might get the impression that the reviewer was not pleased with this volume. The facts are that, if one realizes the defects inherent in any book of this character, he is forced to conclude that this synopsis of heart disease is the most complete of its type that has ever been published. I am convinced that students, practitioners of medicine, and cardiologists will profit greatly by a review of this book, and it will serve well at all times as a reference guide when one is dealing with diseases of the cardio-vascular apparatus.

W. B. P.

Principles and Practice of Recreational Therapy. For the Mentally Ill. By JOHN EISELE DAVIS, B. A., M. A., Senior Physical Director, Veterans Administration Facility, Perry Point, Maryland, etc. In Collaboration with DR. WILLIAM RUSH DUNTON, Jr., Instructor in Psychiatry, The Johns Hopkins University, etc. New York. A. S. Barnes and Company. 1936. Octavo of 206 pages. Cloth. Price, $3.00.

This is an unusual book on an unusual subject. Much has been written upon occupational therapy and but little upon recreational therapy for the mentally ill. This reviewer had used occupational therapy in the standardized form for neurologic and

psychoneurotic cases for some years but about five years ago discontinued it and substituted recreational therapy with great satisfaction. John Eisele Davis in the present book in collaboration with Dr. William Rush Dunton, Jr., and a foreword by Dr. Adolph Meyer, goes further and more scientifically into recreational therapy toward re-socializing the mentally ill than onyone else has done.

The author feels that the functional types respond psychogenetically in a larger sphere than do the organic types who are restricted by physical impairment. The restoration of social perspective and social strivings is aimed at. The relative value of discipline and interest is evaluated and for antagonistice types a highly diversified program is introduced in accordance to the individual mental levels of the personalities dealt with. In this manner recreational therapy is used as a conditioning introductory medium for other forms of treatment.

Different and appropriate forms of recreation are outlined for the mental type to which the patient belongs whether to the constitutional hysteric, the schizophrenic, the manic, the depressed, the toxic, or the paretic. For instance, competitive games may help the one and injure the other. The patient must be studied, tested, and judged not only by the physician but by the trained recreational worker also. One can only appreciate the value of recreational therapy who has watched the improvement in patients over a considerable period. The administration of this form of therapy requires training, skill, study, resourcefulness, a number of workers, and expense. But the patient gains not only improvement in his mental illness but is more contented and hence it is easier for an institution to handle its patients in this manner as well as more humane.

The author has done his work well and thoroughly but at times is possibly a little over the heads of even institutional physicians and workers, but paraphrasing slightly "a man's reach should always be beyond his grasp". There should be a good field for the development of recreational workers both male and female and for the introduction of more definite instruction of those contemplating this work. Davis' work is provocative and well performed and this book should be carefully read by all who are charged with the care of the mentally disturbed.

BEVERLEY R. TUCKER.

Why Bring That Up? A Guide to and from Seasickness. By Dr. J. F. MONTAGUE, Medical Director, New York Intestinal Sanitarium; Late of University and Bellevue Hospital Medical College; etc. Home Health Library, Inc. New York. 1936. Octavo of 130 pages. Illustrated. Cloth.

This remarkable little volume gave the reviewer much valuable information and a great deal of real enjoyment. The author has attempted to place in this book data about seasickness which should be of immense value to anyone who is contemplating an ocean voyage. In addition to a very concise and authoritative discussion in a relatively simple fashion of this most elusive dyscrasia, he has incorporated in the book all the useful information that an inexperienced traveller should have. He has gone so far as to indicate how and where one can obtain a passport, given a most reassuring discussion of the safety of sea travel, when and where to go, and finally very practical suggestions as to luggage, what to do at ports of call, vaccination, and how to avoid unscrupulous companions while on the ship.

The reviewer has had a good deal of practical experience with mal-de-mer and hence naturally does not agree *in toto* with the author's concept of the pathogenesis of seasickness. I doubt if the writer could justify the comparison which he makes between Pavlov's experiments on conditioned reflexes and the ill effects of ship odors in the precipitation of vomiting. However, one must be impressed with the fact that many obnoxious stimuli which enter through the special senses may accentuate seasickness, or, at times, break down the individual's morale to the end that his malady becomes apparent to even the casual observer. There is one typographical error on page 45. The chemical term sodium nitrate is used instead of sodium nitrite.

The author shows throughout the book a distinct degree of humor and sarcasm quite typical of that which characterized Mark Twain. The volume should be of immense interest and pleasure to physicians as well as the laity. W. B. P.

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Editorial

Vaccine in the Prevention of Rocky Mountain Spotted Fever.

Sixteen cases of Rocky Mountain Spotted Fever in Virginia during the first months of 1936 is not an alarming incidence, but it is sufficient to show that this disease, until 1930 thought to be confined to that part of the country west of the Mississippi River, is more and more becoming a problem in the East, particularly along the Atlantic Seaboard.

During the months of May, June and July the hungry *Dermacentor variabilis*, as our common dog tick is called by the entomologists, climbs to the edge of bushes and to the top of sprigs of grass that border our overland trails, waiting for the camper, the hiker, the huntsman. From such lurking places he falls upon us, not by chance but with well-planned design. The human body with its rich blood supply just under the skin is a rare feeding ground for the hungry *Dermacentor*. Uninfected, he is just an ugly parasite to be picked off and disposed of at leisure. Infected with Rocky Mountain Spotted Fever, he is a deadly enemy in the presence of which it is fatal to be casual. Fortunately there is a great deal known about the prevention of Rocky Mountain Spotted Fever.

If we cannot avoid tick infected areas we can prevent ticks from gaining access to our skins by wearing proper clothing. We can systematically search our bodies for their presence at least twice a day when in localities in which they abound. Thanks to the recent work of the United States Public Health Service a vaccine is now available for the prevention of this disease. The vaccine is an emulsion of the crushed bodies of infected ticks and is apparently effective either in preventing or in favorably moderating the disease. It is of no value in treatment. Those whose pleasure or business subjects them to repeated tick implantation, particularly in infected districts, are advised to be vaccinated. Two or three weekly injections of the vaccine (usually unattended by reactions) afford protection for a single year only.

Summer Tidbits.

1. Wile and Hand of the University of Michigan, told the American Medical Association that 100 per cent of cancer of the lip is curable if it is eradicated in the early stages.

2. W. O. Frohring of Ohio, by heating milk to about 240 degrees Fahrenheit, claims to have rendered it harmless for milk-sensitive allergic patients.

3. Hoyne of Chicago, using Ferry's meningococcus antitoxin, reports a fatality rate for meningococcus meningitis of only 11.8 per cent.

4. Paul White of Boston, recently said that sixty of the 1,500 young people with acute rheumatic heart disease that he had seen, recovered so completely

that later in life no signs of heart disease were discoverable.

5. Figures recently released by the United States Census Bureau show that the death rate of 1936 is higher than it was in 1935.

6. E. V. Allen of the Mayo Clinic, advocates an intravenous injection of sodium pentothal in the selection of hypertensive patients suitable for sympathectomy. If during the sleep induced by the sodium pentothal the blood pressure falls, patients are considered fit subjects for the operation.

7. R. R. Spencer of the United States Public Health Service, recommends a new specialty to be known as medical sociology. Into it he would gather social service workers, public health nurses and doctors.

8. Eley and McKhann of Boston, report the advantages of a new extract of the placenta in the control of hemophilia.

9. W. G. Lennox and his co-workers at Harvard have employed the electroencephalogram to show that many of our sedatives cause a marked rearrangement of the normal "brainwaves."

10. A. M. Fishberg and his associates in New York have successfully measured the rate of blood flow by the intravenous injections of saccharin, noting the time required thereafter for the patient to register a sweet taste on the tongue. The normal rate varies between nine and sixteen seconds. These investigators, as a result of using this method of study, believe that heart failure in pneumonia rarely if ever occurs, but that pulmonary edema results from increased capillary permeability.

11. Max Goldzieher of New York, recently transplanted the adrenal gland from a healthy woman into a man suffering from Addison's disease. The patient lost the discoloration of his skin, felt as well as ever and returned to work. Zwemer and Truszhowski of Columbia University, have also recently contributed to our knowledge of Addison's disease in showing the importance that potassium plays in it. Diets low in potassium now seem indicated in the management of the disease.

12. Finkelman and Hoffron of Illinois, believe that disturbances in the heat, circulatory, oxygen, and water balance regulating functions of the hypothalamus are responsible for Schizophrenia.

13. Hitchcock and Curtis of Ohio State University report that section of the splanchnics of a boy with severe diabetes requiring 100 units of insulin a day so improved his condition that thereafter he was able to get along on half the original dose.

14. Through the joint efforts of Alabama and Duke Universities ancient Indian burial mounds were recently explored at Moundsville, Alabama. Among the lesions of bones which the excavated skeletons showed, syphilis seemed to be prominent. The discovery forges another link in the theory of the American origin of the disease.

15. David Perla of New York, thinks he has discovered a new pituitary hormone with control over the spleen. There is apparently no end to the activities of the small occupant of the sella turcica.

16. The Copeland Bill, an attempt to modernize the now thirty-year-old Wiley Act, misses the mark so badly that the *Journal of the American Medical Association* frankly hopes that the whole legislative program will be abandoned.

Silicosis.

Silicosis as a serious health hazard has been recognized for a long time, but not until Secretary Perkins gathered labor, industry and the medical profession into a National Conference on the subject on April 14, 1936, was any nation-wide study attempted. At this conference it was shown that probably as many as four and one-half million workers in industry have some exposure to harmful dust. Although the disease is incurable it is preventable and the major effort of the conference was to bring all existing knowledge upon the subject to a focus that a nation-wide plan for the control of the disease might be evolved. Following an animated session the conference adjourned in order that its committees on medicine, engineering and other phases of the problem might have time to meet for further study and to prepare reports for another general conference to be called some months hence.

A Typhoid Carrier Registry.

New York now has 361 typhoid carriers under supervision. In the Empire State carriers are registered, put upon or removed from the registry as the proper bacteriological examinations indicate. About 4 per cent of cases of typhoid become carriers. Has Virginia such a registry?

Another Medical Society.

A recent issue of the *Journal of the American*

XUM

Medical Association has this to say concerning the proposed International College of Surgeons:

"Into the welter of scientific, pseudoscientific, medical and similar organizations which now appeal for the physician's patronage comes the International College of Surgeons, promoted by none other than H. Lyons Hunt, who has already to his credit (sic) the Association of Medical Editors and Authors. The prospectus indicates that the purpose of the organization is to bring together in closer harmony the leaders of the various colleges of surgeons now in existence; yet there is not the slightest evidence that the colleges of surgeons in any country have indicated their willingness to be brought together by this new organization. . . . Apparently the first comers are all being appointed, but by whom and under what authority the prospectus sayeth not. . . . There exists already an international surgical organization of standing and repute. No doubt an invitation to membership in this organization would be a considerable honor and well worthy of consideration by any competent surgeon. An invitation to membership in the present promotion might be considered more of an insult to the intelligence of the recipient than a recognition of extraordinary qualifications."

Department of Clinical and Medical Education of the Medical Society of Virginia

Post-Graduate Teaching in Obstetrics.

Dr. L. L. Shamburger, who has been engaged by the Department of Clinical and Medical Education to carry forward its post-graduate teaching in the subject of Obstetrics, began his duties on July 1st. Dr. Shamburger, at the request of the Department, spent his first two weeks in visiting physicians and local society officers in the communities of Richmond, Petersburg, Danville, Lynchburg, Roanoke, Norfolk, Charlottesville, Waynesboro, Staunton, Winchester, Leesburg, Alexandria, Culpeper, and Warrenton. At the first opportunity Dr. Shamburger will visit communities and society officers in other sections of the State.

The purpose in making these visits has been not only that of establishing personal relationships between the instructor and physicians, but also that of getting advice and suggestions for carrying forward post-graduate instruction on the foundations previously laid by Dr. Maxwell E. Lapham, who spent two and a half years in the State lecturing and holding clinics in the subject of Pre-Natal and Post-Natal Instruction.

Dr. Shamburger reports that he finds a very high regard and respect for the work accomplished under the leadership of Dr. Lapham. He reports, furthermore, a genuine interest on the part of local societies and leading physicians in carrying forward this continuing post-graduate education. Emphasis, it would seem, should be placed in the future on informal teaching methods as compared with formal lectures and clinics. This is especially true in the subject of obstetrics. Accordingly, the Department, working with Dr. Shamburger, is trying to discover methods for making the most effective use of personal conferences with physicians, bedside consultations where they are requested, and other closely related informal precedures. The Department and Dr. Shamburger will welcome suggestions.

Dr. Shamburger has been invited by the city of Suffolk and the counties of Isle of Wight and Nansemond to spend at least two weeks in these communities working under the general direction of the local medical society. During this period, which commences July 20th, Dr. Shamburger will be available in these centers for personal conferences and consultations. He may also offer under the sponsorship of the local society a limited number of lectures and more formal clinics.

Immediately following the work in these centers, Dr. Shamburger will be available to other local societies in the State. The plan of instruction to be followed will depend largely upon the wishes of the officers in each society, but will fall into (a) informal methods including personal conferences and

bedside consultations and demonstrations, and (b) somewhat more formal lectures and clinics, in which motion pictures, bibliographies and mimeographed materials will be used.

Local societies interested in having Dr. Shamburger will please communicate with the Executive Secretary of the Department, George B. Zehmer, University, Virginia.

Proceedings of Societies

The Virginia State Board of Medical Examiners,

As a result of its examinations held in June, has issued licenses to the following physicians to practice in Virginia:

Dr. John Edwin Adams, University.
Dr. R. Curtis Allison, Petersburg.
Dr. John Thompson B. Ambler, Baltimore, Md.
Dr. Ellis April, Ballston.
Dr. Donald Lurton Arey, Danville.
Dr. Homer Bartley, Roanoke.
Dr. Julian Ruffin Beckwith, Petersburg.
Dr. Newton A. Beeton, Roanoke.
Dr. Clift Palsgrove Berger, Washington, D. C.
Dr. Raymond August Berger, Richmond.
Dr. William Edward Bippus, Wheeling, W. Va.
Dr. Ben Bogen, Brooklyn, N. Y.
Dr. Carrington L. Booker, Miami, Fla.
Dr. Malcolm A. Bouton, Schenectady, N. Y.
Dr. John Marshall Boylin, Bristol, Tenn.
Dr. Philip Bress, Norfolk.
Dr. Charles Pugh Brown, Norfolk.
Dr. Dominick Brusca, Hoboken, N. J.
Dr. Jacob Baldwin Bruce, Boston, Mass.
Dr. Robert Manfred Caldwell, Galax.
Dr. J. R. T. Carmichael, Kyrock, Ky.
Dr. Leon Richard Culbertson, Norton.
Dr. Arthur Davidman, Rocky Mount.
Dr. James Lucius Davis, Raccoon Ford.
Dr. Edward Kyle Disney, Jenkins, Ky.
Dr. Elbert White Dodd, Jr., Buchanan.
Dr. Martin Donelson, Danville.
Dr. Siegfried Dratler, Norfolk.
Dr. George Andrew Duncan, New York City.
Dr. Robert R. Eason, Richmond.
Dr. James William Elliott, Winfall.
Dr. William Hughes Evans, Richmond.
Dr. Homer Earle Ferguson, Richmond.
Dr. Richard Butler Ferguson, University.
Dr. Lucian Minor Ferris, University.
Dr. William Frederic Fidler, Richmond.
Dr. Harry Carrington Fleming, Grafton, W. Va.
Dr. William Samuel Francis, Jr., Marion.
Dr. William Wallace Fuller, Richmond.
Dr. William Yates Garrett, Richmond.
Dr. Robert Lindsay Gilliam, II, Andersonville, Ga.
Dr. Lyle Jamesson Hansbrough, University.
Dr. Forest Gilkeson Harper, Staunton.
Dr. Carrington Harrison, Danville.
Dr. Walter F. Hartman, Swoope.
Dr. Marvin R. Houck, Ronceverte, W. Va.
Dr. Samuel Walter Huddle, Rural Retreat.
Dr. Frank Curtis Hudgins, Jr., Norfolk.
Dr. Hosea Dewain Ireland, Stapleton, N. Y.
Dr. Abe Meyer Jacobson, Richmond.
Dr. David Jaffe, Brooklyn, N. Y.
Dr. Jacob G. Jantz, Richmond.
Dr. Harold Milner Johnson, Arlington.
Dr. Acquilla Richard Johnston, St. George, S. C.
Dr. Clarence Porter Jones, Jr., Craigsville.
Dr. John Hobart Judson, Washington, D. C.
Dr. Frank Aloysius Kearney, II, Phoebus.
Dr. Edwin Lawrence Kendig, Jr., Victoria.
Dr. Daniel David Klaff, Baltimore, Md.
Dr. Max Koenigsberg, Fayetteville, N. C.
Dr. Louis Xavier Kolipinski, Washington, D. C.
Dr. Jacob Himi Kress, Washington, D. C.
Dr. Edgar Willis Lacy, Jr., Richmond.
Dr. Arthur Brown Lee, Washington, D. C.
Dr. Marion Sumpter Love, Danville.
Dr. Joseph Hawkins Low, Jr., Welcome.
Dr. William Eugene Lynn, Lovettsville.
Dr. Jean McNutt Martin, Middlebrook.
Dr. Johnnie A. McCullough, Richmond.
Dr. Robert Wm. McCullough, University.
Dr. Carl Wise Meador, Richmond.
Dr. Louis Alan Micou, Farmville.
Dr. Solomon Bear Mizroch, Norfolk.
Dr. Henry Lawrence Monk, Salisbury, N. C.
Dr. Thomas Addison Morgan, Franklin.
Dr. John Watson Morris, Richmond.
Dr. George Wray Morse, Baltimore, Md.
Dr. Ila Frances Moser, Morgantown, W. Va.
Dr. Fred August Moss, Clarendon.
Dr. John Henry Murry, Richmond.
Dr. Richard Carroll Neale, Lanesville.
Dr. Nowell Darden Nelms, Newport News.
Dr. Robert Burwell Nelson, Jr., Winchester.
Dr. William Maurice Nethery, Lovelock, Nev.
Dr. M. R. Nicholson, Arlington.
Dr. John Keller Owen, Baltimore, Md.
Dr. Charles Grandison Pearson, University.
Dr. Glenn Ward Phipps, Galax.
Dr. Frank Noera Pole, Richmond.
Dr. Edward Scott Ray, Charlottesville.
Dr. Frederick F. Richards, Washington, D. C.
Dr. Guy Carson Richardson, Bristol, Tenn.

XUM

Dr. Duane Case Richtmeyer, Washington, D. C.
Dr. John Calhoun Risher, University.
Dr. Spotswood Robins, Richmond.
Dr. Ralph George Rohner, Braddock, Pa.
Dr. Milton Salasky, Richmond.
Dr. Frank Bernard Schultz, Washington, D. C.
Dr. Richard Wickham Sharpe, Norfolk.
Dr. Josiah Thomas Showalter, Cambria.
Dr. John Donald Sinclair, Warrenton.
Dr. Alfred Littlefield Smith, Seattle, Wash.
Dr. Leroy Smith, Richmond.
Dr. George Irving Sneidman, Hartford, Conn.
Dr. Walton Herbert Springall, Newport News.
Dr. Jack Srulowitz, Brooklyn, N. Y.
Dr. Alexander Armstrong St. Clair, Bluefield, W. Va.
Dr. Wade Hampton St. Clair, Jr., Bluefield, W. Va.
Dr. Charles Willis Steel, Jr., Norfolk.
Dr. Meyer Steingold, Norfolk.
Dr. George Benjamin D. Stephens, Washington, D. C.
Dr. Charles Lawrence Stinson, Glen Ferris, W. Va.
Dr. William Norman Thornton, Jr., Rochester, N. Y.
Dr. Walter Forrest Thornton, Lynchburg.
Dr. Thomas Cabell Todd, New York City.
Dr. Lewis Sheldon Trostler, Brooklyn, N. Y.
Dr. Eric Twachtman, Greenwich, Conn.
Dr. Arthur LaGrange Van Name, Jr., Norfolk.
Dr. Walter Emerson Vermilya, Raleigh, N. C.
Dr. Charles Weston Warren, Middleburg.
Dr. Oswald Massena Weaver, University.
Dr. Karl Espenschide Weier, Bastian.
Dr. George Austin Welchons, Norfolk.
Dr. Claude Benjamin White, San Francisco, Calif.
Dr. Edgel Wiley, Columbia, Pa.
Dr. Frederick Herzel Yorkoff, Charlottesville.
Dr. John Witten Yost, Jr., University.
Dr. William Angle Young, Richmond.

CHIROPODISTS

Dr. Harvey P. Pilzer, Portsmouth.
Dr. LeRoy Max Walinski, Richmond.

Northampton County Medical Society.

On July 1st, the Northampton County Medical Society, with a few visitors from the Accomack Society and the Ladies Auxiliary of the two Societies, met for a picnic at Wilkins Beach.

In the brief business session, the Society welcomed Dr. H. B. Magill, Jr., as new Director of the Northampton County Health Unit. The following resolutions were adopted in regard to Dr. A. B. McCreary:

Whereas: Dr. A. B. McCreary, Director of the Northampton Health Unit for the past sixteen months, has tendered his resignation in order to accept a more lucrative position with the Florida State Board of health, and

Whereas: This body feels a high regard for Dr. McCreary and the work he has done here; he having planned and put into effect the Medical Participation Program in this County, and by means of health education, improved sanitation, and communicable disease control has demonstrated the feasibility of this plan;

Therefore be it Resolved: That the Northampton Medical Society wishes to make known its appreciation of Dr. McCreary's excellent work in Northampton County in restoring public health to its rightful position in the minds of the people, which has been due in large measure to his tact, honesty and energy in promoting the work, and

Be it further Resolved: That we wish him well, and a full measure of success in his new field, and

Be it further Resolved: That a copy of these resolutions which have been unanimously adopted, be spread upon the minutes of the society, a copy sent to Dr. McCreary, and copies sent to the *Northampton Times* and the VIRGINIA MEDICAL MONTHLY.

The Fourth District Medical Society

Held its regular meeting at Farmville, Va., July 21st, under the presidency of Dr. Thomas G. Hardy of that place. To the local committee, composed of Drs. Hardy, R. A. Moore, H. B. Holsinger, and J. H. Smith, is due much credit for a most enjoyable and interesting meeting. Papers were presented by Dr. J. M. Hurt of Blackstone, Drs. R. A. Moore, H. B. Holsinger and J. H. Smith of Farmville, Drs. Hyman Cantor and Wright Clarkson of Petersburg, and Dr. W. Ambrose McGee, invited guest, from Richmond. Following the scientific session, Dr. Hardy entertained the Society on the lawn of his residence after which the doctors had dinner at Hotel Weyanoke.

The next meeting will be held in Emporia on the afternoon of Tuesday, August 18th.

News Notes

Delegates for Staunton Meeting.

Plans are progressing for an A-1 meeting in Staunton on October 13th, 14th and 15th, and a good time is in store for all who can arrange to attend.

Many component societies have advised headquarters of names of their delegates and alternates to the House of Delegates for this meeting. There are a number who have not yet furnished this information, however, and it would be appreciated if these

societies would select their representatives in the near future. It is the desire of the officers to have a full list of delegates and alternates published in the MONTHLY, prior to the meeting.

New Appointments in the State Board of Health.

DR. C. HOWE ELLER has been appointed Assistant Director of the Bureau of Rural Health in the State Health Department, effective July 1, 1936, to succeed Dr. Wm. D. Tillson, who resigned to accept the position of Director of the newly formed Bureau of Industrial Hygiene. Dr. Eller was formerly Health Officer of the Albemarle County-Charlottesville City-University of Virginia Health District.

Dr. Eller is a graduate of the University of Colorado School of Medicine. He engaged in the private practice of medicine in Albuquerque, New Mexico, and was later appointed Health Officer of the county of Bernalillo. He was awarded a fellowship for post-graduate study in public health by the Rockefeller Foundation, and in 1933 received a Certificate in Public Health and in 1934 the degree of Doctor of Public Health from the Johns Hopkins University School of Hygiene and Public Health.

DR. R. G. BEACHLEY has been appointed Deputy Director of Rural Health in Southwest Virginia in the State Health Department Office at Abingdon, effective July 1, 1936, to succeed Dr. Edgar C. Harper, who resigned to accept the position of Director of the newly formed Crippled Children's Bureau in the State Health Department. Dr. Beachley holds the degree of Doctor of Public Health from the University of Georgia and has engaged in public health work since 1922.

DR. R. D. HOLLOWELL has been appointed Director of the Albemarle County-Charlottesville City-University of Virginia Health District, with headquarters at Charlottesville, to succeed Dr. C. Howe Eller, effective July 1, 1936. Dr. Hollowell was formerly Director of the Valley Health District and was granted a leave of absence to accept a fellowship to Johns Hopkins University School of Hygiene and Public Health, from which he received a Certificate in Public Health.

DR. F. N. THOMPSON, who has just completed a course in public health at the University of North Carolina Division of Public Health, was appointed District Health Officer, effective July 1, 1936, to serve with Dr. Robert P. Cooke, Health Officer of the Alleghany-Rockbridge Health District, with headquarters at Lexington. Dr. Thompson is a graduate of the Medical College of Virginia.

DR. JOHN D. HAMNER, JR., has been appointed Assistant Health Officer of the Arlington County Health Department, with headquarters at Clarendon, effective June 8, 1936. Dr. P. M. Chichester is the Director of this department. Dr. Hamner is a graduate of the Medical College of Virginia.

DR JOHN C. NEALE, JR., has been appointed Director of the Augusta County Health Department, with headquarters at Staunton, effective June 22, 1936, to serve with Dr. H. M. Wallace, Assistant Director. Dr. Neale was formerly Director of the Henrico County Health Department and was granted a leave of absence to accept a fellowship to Johns Hopkins University School of Hygiene and Public Health, from which he received a Certificate in Public Health. Dr. Neale is a graduate of the Medical College of Virginia.

DR. H. B. MAGILL, JR., has been appointed Director of the Northampton County Health Department, with headquarters at Eastville, effective July 8, 1936, to succeed Dr. A. B. McCreary, who resigned to accept a position with the State Health Department of Florida. Dr. Magill has just completed one year's internship at the United States Public Health Service Hospital in Norfolk, Virginia.

Halifax and Pittsylvania Counties, heretofore in a joint health district, now support separate health departments, effective July 1, 1936. Dr. D. C. Steelsmith is the Director of the Halifax County Health Department, with headquarters at South Boston, and Dr. W. H. Walcott is the Director of the Pittsylvania County Health Department, with headquarters at Chatham.

XUM

The following three medical trainees have been assigned for purposes of field training to the districts named below:

Dr. B. Randolph Allen, Valley Health District, Luray, Va.; Dr. Sheldon D. Carey, State Health Department Office, Abingdon, Va.; Dr. R. Campbell Manson, Brunswick - Greenesville - Mecklenburg Health District, Lawrenceville, Va.

The International Assembly of the Inter-State Postgraduate Medical Association of North America

Will be held in the public auditorium of St. Paul, Minn., October 12th, 13th, 14th, 15th and 16th, under the presidency of Dr. David Riesman of Philadelphia. Pre-assembly clinics will be held on Saturday, October 10th and post-assembly clinics Saturday, October 17th in the hospitals of St. Paul.

The aim of the program committee, with Dr. George Crile as chairman, is to provide for the medical profession of North America an intensive postgraduate course covering the various branches of medical science. The program has been carefully arranged to meet the demands of the general practitioner, as well as the specialist. Extreme care has been given in the selection of the contributors and the subjects of their contributions.

In cooperation with the Minnesota State Medical Association, the Ramsey County Medical Society will be host to the Assembly and has arranged an excellent list of committees who will function throughout the Assembly. A most heartly invitation is extended to all members of the profession who are in good standing in their State or Provincial Societies to be present and enjoy the hospitality of the medical profession of St. Paul. A registration fee of $5.00 will admit to all the scientific and clinical sessions.

A list of the distinguished teachers and clinicians who will take part on the program will appear in the September issue of this Journal.

Special railroad rates will be in effect.

For further information write Dr. W. B. Peck, Managing-Director, Freeport, Ill.

Married.

Dr. Randolph Beaton Turnbull, Blue Ridge Sanatorium, Charlottesville, Va., and Miss Celestine Walker, University, April 17th. Dr. Turnbull is a graduate of the Department of Medicine, University of Virginia, in 1933.

Dr. Chester E. Haberlin, Stratford, Conn., and Miss Marian Kathryn Page, Bridgeport, Conn., June 11th. Dr. Haberlin is a graduate of the Medical College of Virginia.

Dr. Claude Alexander Nunnally and Mrs. Emma Lawless Smith, both of Fredericksburg, Va., July 1st. They will spend their honeymoon in Europe. Dr. Nunnally is a graduate of the Medical College of Virginia in 1929.

Dr. R. E. Timberlake and Mrs. Johnnie R. Smith, both of Richmond, Va., June 29th.

Dr. Kinloch Nelson and Miss Alice Magill Deford, both of Richmond, July 23rd.

Dr. Francis Keith Bradford, Chicago, Ill., and Miss Margaret Anne Bowles, Richmond, recently. Dr. Bradford is a graduate of the Medical College of Virginia, class of '33.

West Virginia State Medical Association.

At the recent annual meeting of this Association, Dr. William S. Fulton, Wheeling, was chosen president, to take office on January 1st, and Drs. George R. Miller, Fairview, and Frank C. Hodges, Huntington, were elected vice-presidents. Mr. Joe W. Savage, Charleston, is executive secretary of the Association.

Dr. W. A. Carr,

Who has been physician with the Harman Coal Company for a number of years and was formerly located in McDowell County, W. Va., is now with this same Company at Harman in Buchanan County, Virginia.

Dr. A. P. Traynham,

Former coroner of Henrico County, Virginia, but who was appointed county jail physician when the new form of government went into effect, has been re-appointed to this latter office for a term of four years beginning September 1st.

Appointments in Rotary Club.

Drs. L. H. Bracey and W. J. Ozlin, both of South Hill, Va., have been appointed members of committees of their local Rotary Club for the coming year.

Dr. A. W. Terrell Honored.

Dr. A. W. Terrell, of Lynchburg, Va., was honored on June 30th, at a testimonial dinner attended by over two hunderd of the leading business and professional men of Lynchburg. The occasion was

the completion of fifty years of practice in Lynchburg. The dinner was held at the Randolph Macon Woman's College, and Dr. Theodore H. Jack, President of the College, presided. Dr. W. B. Thornhill, a classmate of Dr. Terrell's was introduced. Hon. Carter Glass spoke briefly, and Hon Fred Harper gave a short address eulogizing Dr. Terrell, at the conclusion of which Dr. Terrell was presented with a handsomely bound testimonial of affection, signed by those present. It was also announced that a fund had been subscribed for the erection of an infirmary at R.M.W.C. to be called the A. W. Terrell Infirmary. Dr. Terrell has been college physician at Randolph Macon since the college was founded. In addition he has had a large private practice, and numbers among his friends and admirers practically every Lynchburg citizen.

Dr. Howard R. Masters,

Richmond, Va., was the chief speaker at the annual meeting of the Stafford Public Health Association in Falmouth, Va., on the evening of July 21st.

Graduate Fortnight of New York Academy of Medicine.

The ninth annual Graduate Fortnight of the Academy will be held October 19th to 31st and will be devoted to a consideration of TRAUMA: OCCUPATIONAL DISEASES AND HAZARDS. Twenty-three important hospitals of the city will present coordinated afternoon clinics and clinical demonstrations. At the evening meetings prominent clinicians from various parts of the country, recognized authorities in their special lines of work, will discuss various aspects of the general subject.

A comprehensive exhibit of books, pathological and research material, apparatus for resuscitation and other first aid appliances will be assembled. Demonstrations will be held at regular intervals.

The medical profession is invited to attend.

A complete program and registration blank may be secured by addressing Dr. Frederick P. Reynolds, The New York Academy of Medicine, 2 East 103d Street, New York City.

The American Public Health Association

Will convene in New Orleans, La., in October for its sixty-fifth annual meeting. Dr. Thomas A. Parran, Jr., Surgeon-General of the United States Public Health Service, is President-elect of the Association and will be honored at New Orleans.

National headquarters of the American Public Health Association are 50 West 50th Street, New York, N. Y., and Dr. Reginald M. Atwater is Executive Secretary.

Dr. L. Nelson Bell

Sails on August 8th on the "Empress of Asia" for Tsingkiangpu, Ku, China, where he will resume his work in the mission field, being stationed at the Tsingkiangpu General Hospital. While on furlough, he was located at Waynesboro, Va.

Dr. C. C. Chewning, Jr.,

Medical College of Virginia '34, has located for general practice at Bowling Green, Va. He is associated with Dr. J. G. Broaddus. Dr. Chewning served a rotating internship at Stuart Circle Hospital, Richmond, and has recently completed an internship at the Medical College of Virginia, Hospital Division.

Dr. E. G. Gill,

Roanoke, Va., sailed from New York on the *Queen Mary* on July 29th. He will attend the International Oto-Rhino-Laryngological Congress in Berlin and will spend some time studying in Vienna and London, returning to his office on September 5th.

Dr. Howard T. Holden,

Of class of '34, University of Virginia, who has recently been engaged in work with the Civilian Conservation Corps, returned to Erlanger Hospital, Chattanooga, Tenn., July 1st, in the capacity of assistant resident. Dr. Holden served his internship at this hospital.

News from the Jefferson Medical College of Philadelphia.

Dr. Hobart A. Reimann, Professor of Medicine at the University of Minnesota Medical School, has been elected Magee Professor of Practice of Medicine and Clinical Medicine. Before his connection with the University of Minnesota Medical School Dr. Reimann held positions with the Rockefeller Institute for Medical Research of New York City and the Peking Union Medical College. Dr. Reimann will assume his duties at the Jefferson Medical College on September 1, 1936.

Dr. Martin E. Rehfuss, Clinical Professor of Medicine since 1933, has been promoted to Professor of Clinical Medicine.

XUM

Dr. Henry K. Mohler, Medical Director of the Hospital, and Associate Professor of Therapeutics, has been promoted to the position of Clinical Professor of Therapeutics in the College.

Dr. Baldwin L. Keyes, who has been a teacher in the Department of Nervous and Mental Diseases since 1930, has been promoted to the position of Clinical Professor of Psychiatry.

News Notes from Duke University School of Medicine.

At the graduating exercises held at Duke University June 8th, thirty-nine medical students received the degree of Doctor of Medicine and twelve the degree of Bachelor of Science in Medicine. At the same time, sixteen nurses received their diplomas in nursing and one received the degree of Bachelor of Science in Nursing.

The summer quarter commenced June 22nd, with forty-six students registered here and two studying in England and Ireland for credit here.

Dr. Wiley D. Forbus, Professor of Pathology, has recently been elected to serve on the National Board of Medical Examiners, succeeding Dr. Howard K. Karsner, and will serve as Chairman of the Pathology Division.

Dr. R. S. Montgomery,

Who since graduation from the Medical College of Virginia in 1934 has interned at St. Luke's Hospital and the hospitals of the Medical College of Virginia, both in Richmond, has located at South Hill, Va., where he is associated with his father, Dr. C. V. Montgomery, in the general practice of medicine and surgery.

Dr. Frederick Pilcher,

Who since his association with Dr. Thomas Wheeldon in Richmond, Va., four years ago has been doing special work in urology at Mayo Clinic, Rochester, Minn., recently received his degree as Doctor of Science in Urology from the University of Minnesota. It is Dr. Pilcher's intention to return to Virginia when he has completed his work at the Mayo Clinic, which will be around the first of January, 1937.

Dr. I. R. Wagner,

Formerly located at Memphis, Tenn., has been transferred to Oteen, N. C., as manager of the Veterans' Administration Facility.

Dr. William V. Rucker,

Who graduated in medicine from the University of Pennsylvania, having completed his internship at Bryn Mawr Hospital, Bryn Mawr, Pa., has returned to his home in Bedford, Va., where he will be associated with his father, Dr. J. A. Rucker, in the practice of medicine.

Dr. A. E. Turman,

Richmond, Va., attended the meeting of the Ancient Arabic Order of the Mystic Shrine, held in Seattle, July 14th-16th. Before returning home, he visited in Southwest Canada, the Pacific States and Texas.

Mr. Zehmer Honored.

Mr. George Baskerville Zehmer, executive secretary of the Department of Clinical and Medical Education of the Medical Society of Virginia, and director of the Extension Division of the University of Virginia, has been awarded a fellowship for a year's study at the University of London. Mr. and Mrs. Zehmer will sail for England on the first of September. This appointment is a part of an exchange plan between American and English universities for developing closer cultural and educational relations between the two countries.

Dr. R. T. Hawks,

Carson, Va., was recently elected chairman of the Prince George County Board of School Trustees.

Dr. James H. Gordon,

Class of '34, Medical College of Virginia, after two years at the University Hospital, Philadelphia, received an appointment as assistant resident in medicine at the Medical College of Virginia hospitals, Richmond, and entered upon his new duties on July 1st.

The Volta Bureau.

Probably every physician comes into contact at least occasionally with one of the three following groups: (1) parents of a child who can neither hear nor speak; (2) parents of a child whose hearing is somewhat impaired; and (3) adults who are losing their hearing. The Volta Bureau was established for the purpose of furnishing information about deafness to all who ask for it. Its services are free. Advice is given as to schools and pre-

school training, lip reading instruction, hearing aids, social contacts, psychological difficulties. While the Volta Bureau is not equipped to do employment service, it gives information in regard to the fields of activity that are open to the deaf and the hard of hearing. The Bureau is located at 1537 35th St., N. W., Washington, D. C.

Dr. J. Stuart Staley,

Formerly of Marion, Va., is now at St. John's Hospital, Tulsa, Oklahoma, where he will take a year's work in medical diagnosis and general and traumatic surgery, after which he will return to Virginia.

Dr. P. G. Hamlin,

Who has for the past six years been clinical director at the Friends Hospital for Nervous and Mental Diseases, Philadelphia, has opened offices at the Buxton Clinic, Newport News, Va., for the practice of neurology and psychiatry. He is a graduate of the Medical College of Virginia, class of 1916.

Dr. Randolph McCutcheon

Has returned to his home in Colonial Heights, Petersburg, Va., where he will resume his former practice. He has recently been in Hamlin, W. Va.

Dr. H. R. Coleman, Jr.,

Formerly of Lexington, Va., is now serving an internship in the Eye, Ear, Nose and Throat Department of the University of Virginia Hospital.

Dr. Hack U. Stephenson, Jr.,

Medical College of Virginia, class of '35, having recently completed a rotating internship in the Hospital Division of the College, has gone to St. Elizabeth's Hospital, Washington, D. C., where he will be a psychiatric resident for a year.

Facts About Commercially Canned Foods.

The American Can Company, New York, has recently published a booklet under the above name. It bears the seal of acceptance of the Committee on Foods of the American Medical Association, and was on display at the Association's Exposition in Kansas City this past Spring. The booklet is composed of reprints of advertisements which have appeared in fifty-one medical and dental journals during the past year and it answers many questions of importance to members of the medical profession.

Dr. J. B. Mears,

Medical Director in the U. S. Navy with the rank of captain, recently of the Ninth Naval District, Great Lakes, Ill., is now at his former home in Keller, Va.

Dr. Leo L. Tylec

Has located at 359 Main St., Union City, Conn., where he will be engaged in the general practice of medicine and surgery. He is a member of the class of '35, Medical College of Virginia, and has recently completed an internship at the St. Francis Hospital, Hartford, Conn.

Erratum.

In the page advertisement in the July issue of The National Drug Company of Philadelphia, the word "grand" appeared instead of the word "giant." The paragraph should have read: "We offer a special Rag Weed Antigen Outfit complete for diagnosis and treatment of Fall Hay Fever for $10. Contains two diagnostic tests for mixed grasses and giant and dwarf rag weeds; 1 ampul-vial each Series 'AA,' 'A' and 'B' Rag Weed Antigen; 25 c.c. ampul-vial Sterile Salt Solution for dilution of antigen if needed; 25 c.c. ampul-vial Epinephrin 1-1000 to control local or systemic reactions."

Dr. C. Howard Cain,

Who did general practice in Orange, Va., from July, 1932 to May, 1935, but later practiced in Conway, S. C., until May, 1936, resumed his practice at his old location in Orange on June 1st.

Changes at Community Hospital, Farmville.

Dr. W. E. Waddell, Jr., who has been resident physician at the Southside Community Hospital, Farmville, Va., since graduation from the University of Virginia in 1934, has been appointed a resident physician at the Norfolk, Va., General Hospital and entered upon his duties there on July 1st.

Dr. William Chalian, who graduated from Johns Hopkins University in 1935 and later interned at Union Memorial Hospital in Baltimore, succeeded Dr. Waddell at the Farmville Hospital.

For Sale—

Surgical Instruments. Apply to Dr. R. M. Wiley, 27 W. Main St., Salem, Va. (*Adv.*)

XUM

Obituary Record

Dr. George Thornhill Harris,

Madison Heights, Va., died at his home in that place on July 16th, death being due to an attack of angina pectoris. He was a native of Richmond, Va., and sixty years of age. Dr. Harris was graduated in medicine from the Kentucky School of Medicine, Louisville in 1898, and had practiced at Madison Heights since shortly after graduation. He was coroner of Amherst County and prominent in the professional and civic life of his community. He had been a member of the Medical Society of Virginia for a number of years. His wife and several sons and daughters survive him.

Dr. Erik Theophile Sandberg,

Well-known eye, ear, nose and throat specialist of Mathews and Cardinal, Va., died July 17th after a long illness. Dr. Sandberg was a native of Sweden but came to this country forty-three years ago. He was sixty-two years of age and a graduate in medicine from the University of the South, Sewanee, Tenn., in 1899. He had taken postgraduate courses in New York, Germany and Vienna. He was a member of his local and State medical societies. His wife and a sister survive him.

Dr. Ernest L. Griffith,

Clifton Forge, Va., died suddenly following a heart attack, June 21st. He had been in bad health for several months. Dr. Griffith was fifty years of age and graduated in medicine from the University of Maryland, class of 1907. He saw service in the World War and was decorated for gallantry in action by the Italian Government which awarded him the Cross of the Chevalier of the Crown of Italy. Dr. Griffith had been a member of the Medical Society of Virginia for fourteen years and was also a member of several other organizations. His wife survives him.

Dr. Thomas P. Darracott,

Tunstall, Va., died suddenly on June 26th. He was seventy-eight years of age and a graduate of the Medical College of Virginia in 1885. Dr. Darracott had been a member of the Medical Society of Virginia for several years. Five sons and two daughters survive him.

Dr. Alvin Judson Hurt,

Well-known physician of Chester, Va., died July 22nd, at the age of seventy-four. He graduated from the Chattanooga (Tenn.) Medical College in 1893. Dr. Hurt was very active in county affairs and had served as a member and chairman of the Chesterfield Board of Supervisors. He was formerly a member of the Medical Society of Virginia. His wife and a daughter survive him.

Dr. Charles W. Fleenor,

Bristol, Va., died April 5th, at the age of 65. He was a graduate of the University of Cincinnati College of Medicine in 1919.

Dr. William Belvidere Meares, Jr.,

Linwood, N. C., died July 13th. He was forty-seven years of age and a graduate of the University of Virginia, Department of Medicine, in 1915. Dr. Meares was formerly engaged in practice in Richmond, Va.

Dr. John Edwin Dougherty

Died suddenly on July 16th at his home in Elkins, W. Va. He graduated from the Medical College of Virginia, Richmond in 1924.

Dr. Peyton Page Nottingham,

Ferrum, Va., died suddenly March 10th. He was 55 years of age and a graduate of the University of the South Medical Department, Sewanee, Tenn., in 1904.